

**Grasse River Sediment Remediation Project**  
**Massena, New York**

Specifications

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Prepared for:



Prepared by:



**SECTION 00 01 10**

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**SECTION 00 31 00**

**AVAILABLE PROJECT INFORMATION**

**PART 1 – GENERAL**

1.01 REFERENCED SECTIONS (NOT USED)

1.02 REFERENCES

- A. The following information is available to the Contractor. This information is for reference only and is not part of the Contract.
1. Comprehensive Characterization of the Lower Grasse River Report (Alcoa, April 2001)
  2. Documentation Report – Grasse River Capping Pilot Study (Alcoa, April 2002)
  3. Draft Remedial Options Pilot Study Documentation Report (Alcoa, May 2006)
  4. Draft Addendum to the Comprehensive Characterization of the Lower Grasse River Report (Alcoa, April 2009)
  5. Record of Decision (EPA, April 2013)
  6. Draft Pre-Design Investigation Data Summary Report (Alcoa, March 2015), including treatability study results
  7. Intermediate Design Report (Alcoa, September 2016)
  8. Route 131 Staging Area Basis of Design (CDM Smith, November 2016)
  9. Route 131 Staging Area Specifications and Drawings (90% Design Submittal Bid Set; CDM Smith, December 2016 and April 2017)
  10. Draft Pre-Design Investigation Data Summary Report Addendum No. 1 (Arconic, March 2017)
  11. Draft Final Secure Landfill Operations and Maintenance Manual (Tetra Tech, July 2017)
  12. Draft Habitat Reconstruction Plan (Arconic, June 2017)
  13. Grasse River Technical Memorandum, Summary of Subsurface Conditions in the Grasse River Remediation Area (Arconic, July 2017)
  14. Inactive Natural Gas Piping Abandonment Documentation (Enbridge)
  15. Route 131 Staging Area As-Built Drawing (January 2018)
  16. Grasse River Technical Memorandum, Summary of Subsurface Conditions at the Rt. 131 Staging Area (CDM Smith, March 2018)
  17. Construction Quality Assurance Plan (including Environmental Monitoring Plan) (Arconic, March 2018)

18. Community Health and Safety Plan (Arconic, March 2018)
19. Contingency Plan (Arconic, March 2018)
20. Grass River Boat Launch Photographs
21. 2017 Amendment Testing Data Summary (Arconic, September 2017)
22. Borrow Source Evaluation Information (2014)
23. Arconic Dive Safety Standard for Commercial Air Diving Operations (Arconic)
24. Bathymetry Information Near the Alcoa East Dock (2001)
25. Hydraulic Evaluation of Force Main (CDM Smith, June 1, 2016)
26. SPDES permit information for the Massena Facility
27. Overview of High Water Elevation for Shoreline Delineation (Alcoa, May 14, 2015)
28. Staged Capping Test Work Plan – Grasse River Remediation Project (Arconic, July 2018)
29. 2014 Long-Term Monitoring Data Summary Report – St. Lawrence River Remediation Project (Anchor QEA/Arcadis October 2015)
30. Armored Cap Locations Near Alcoa East Dock (2009)
31. Outfall 001 Gage Data

1.03 DESCRIPTION

- A. This Specification identifies certain reference information relating to Project Site conditions and data that are available to the Contractor but that will not be part of the Contract Documents.

1.04 SUBMITTALS (NOT USED)

1.05 AVAILABLE PROJECT INFORMATION

- A. Part 1.02.A lists reference information that is available from the Company. The Contractor is responsible for reviewing the available reference information prior to submitting a Bid and executing the Contract.
- B. Company-supplied information is provided to the Contractor only for information and convenience and is not a warranty of existing conditions. Company-supplied information is intended to supplement rather than serve in lieu of the Contractor's own investigations. The Company, Construction Manager, and Engineer disclaim responsibility for accuracy of information that has been prepared by others. The Company, Construction Manager, and Engineer further disclaim responsibility for interpretation of that information by the Contractor.
- C. The Company will not consider requests for additional compensation for extra Work due to conditions that reasonably could have been anticipated from the available reference information.

- D. The Drawings and Specifications require the Contractor to conduct surveys and investigations and collect certain additional data and information prior to or as part of construction. The Contractor is responsible for obtaining additional information if the Contractor desires or as needed to complete the Work.

**PART 2 – PRODUCTS (NOT USED)**

**PART 3 – EXECUTION (NOT USED)**

**- END OF SECTION -**

**SECTION 00 31 19**

**EXISTING CONDITION INFORMATION**

**PART 1 – GENERAL**

**1.01 REFERENCED SECTIONS**

- A. Section 00 31 00 – Available Project Information
- B. Section 01 50 00 – Temporary Facilities and Controls
- C. Section 35 55 29 – Dredged Material Processing and Handling

**1.02 REFERENCES**

- A. Comprehensive Characterization of the Lower Grasse River (CCLGR) Report (Alcoa, April 2001)
- B. Draft Addendum to the CCLGR Report (Alcoa, April 2009)
- C. Record of Decision (ROD; EPA, April 2013)
- D. Draft Pre-Design Investigation Data Summary Report (Alcoa, March 2015), including associated data packages and addenda
- E. Intermediate Design Report (Alcoa, September 2016)
- F. Title 6 New York Codes, Rules and Regulations Part 373
- G. U.S. Environmental Protection Agency (EPA) Toxic Substances Control Act (TSCA), as described in 40 Code of Federal Regulations (CFR) Part 761

**1.03 DESCRIPTION**

- A. This Specification provides a description of existing condition information for the Project Site.

**1.04 SUBMITTALS (NOT USED)**

**1.05 PROJECT SITE CONDITIONS**

- A. Location of Work and Project Site Description
  - 1. The Grasse River sediment remediation area is located along the northern boundary of New York State in the Town and Village of Massena and encompasses approximately 7.2 miles of the Grasse River between the Massena Power Canal (Power Canal) and the St. Lawrence River. The Arconic Massena-West Plant is located on the north shore of the Grasse River east of the Power Canal.
  - 2. The Grasse River is designated as a navigable waterway by U.S. Army Corps of Engineers and is used by recreational vessels.

3. The section of the Grasse River subject to remediation under this Project was deepened and widened in the early 1900s to support the high flows that entered the river at that time from the Power Canal. In 1958, the high flow through the Power Canal was terminated with the construction of the Moses Saunders Power Dam on the St. Lawrence River. The river bottom is underlain by bedrock, hard till, and marine clays. The river channel is typically 15 to 25 feet deep.
4. The shallow near shore areas where the dredging will be conducted are defined in the ROD as, "the submerged area between the upland and the location where the gentle bathymetric slope along the shoreline meets the steep slope of the main channel side walls. In general, the near shore areas have water depths of five feet or less during normal summer flow and extend approximately 25 feet from shore" (EPA, April 2013). Several of the banks along the river are steep, and the 100- and 500-year floodplains extend minimally beyond the riverbanks.
5. As part of prior Project Site investigations, 72 transects were delineated along the river beginning with Transect (T)1 near the upstream boundary of the Project Site through T72 at the downstream boundary near the mouth of the river. The transect locations are shown on the Drawings.
6. Detailed information regarding the Project Site history, geology, hydrology, hydraulics, floodplains, wetlands, river use, fish habitat, and previous investigations is provided in the CCLGR Report (Alcoa, April 2001), the Draft Addendum to the CCLGR Report (Alcoa, April 2009), the Draft Pre-Design Investigation Data Summary Report (Alcoa, March 2015) and associated data packages and addenda, and the Intermediate Design Report (Alcoa, September 2016). These documents, as well as other information, are provided as reference documents as described in Section 00 31 00 – Available Project Information.
7. A Staging Area is being constructed on property owned by Arconic and situated between County Route 42, New York State Route 131, and the Grasse River. The Staging Area will be used to support sediment processing that is required to meet landfill acceptance criteria (e.g., dewatering, stabilization, or other processing), water treatment, and material transfer of dredged material, backfill material, and cap material to and from barges on the river. In general, the Staging Area will include: space for administrative trailers; parking for operations staff and visitors; electricity and potable water connections; internal haul roads; general storage; an impermeable sediment processing pad; backfill and capping materials storage; a water storage and water pretreatment system area; a new bulkhead for offloading sediments, loading backfill and capping materials, and mooring larger vessels; and a boat launch. Design drawings and specifications for the Staging Area have been provided for reference as described in Section 00 31 00 – Available Project Information. Between April and November 2017, a significant portion of the required Staging Area construction work elements were completed. An as-built construction progress drawing (dated January 26, 2018) has been provided for reference as described in Section 00 31 00 – Available Project Information. The as-built construction progress drawing presents the surveyed work elements completed in 2017, including roads, parking lots, utility lines (i.e., water supply, electrical, and pre-treated water forcemain), stormwater control features, and sediment and water processing areas. It is anticipated that the remaining work will be completed in 2018. The as-built construction progress drawing notes the remaining or partially completed work elements, including the bulkhead wall, boat launch ramp, asphalt paving, and liner containment. Together, the design drawing set and the January 26, 2018 as-built construction progress drawing can be used by the Contractor to understand the original design, surveyed results for completed components, and components to be completed in 2018.



8. Design information showing the layout and design details for the Staging Area are provided as reference documents as described in Section 00 31 00 – Available Project Information. Record Drawings for the Staging Area will be provided to the Contractor after construction is completed. After the Staging Area construction, the Contractor shall be responsible for designing and constructing any modifications or improvements to the Staging Area as needed to support the Work as described in Section 01 50 00 – Temporary Facilities and Controls and Section 35 55 29 – Dredged Material Processing and Handling. At a minimum, the Contractor shall be required to install administrative trailers, water pretreatment and water storage systems, material handling equipment, and docking space for support vessels, in addition to refinements of existing facilities or layouts.
9. Polychlorinated biphenyl (PCB)-contaminated sediment dredged from the Grasse River will be transported to and disposed in Cell 3 at Arconic's onsite Secure Landfill (SLF) located at the Arconic Massena-West Plant. To accommodate the expected volume of sediment to be dredged from the Grasse River, Cell 3 is being expanded by increasing the cell footprint and raising the east berm of the landfill, thereby creating additional storage capacity. Construction of the SLF expansion is being performed by others and was completed in 2017. The SLF was designed and is operated in accordance with New York State regulations for hazardous waste landfills (Title 6 New York Codes, Rules and Regulations Part 373) and the EPA TSCA as described in 40 CFR Part 761. SLF expansion, operations, and closure activities will be performed by others and are not part of the Contractor's scope. The Contractor shall be required to coordinate with the SLF Operations Contractor as part of material transport, unloading, and disposal operations.
10. Portions of the Alcoa Massena-East Plant, including the most eastern dock facility, may be available for use by the Contractor. The Contractor shall identify in their Bid if their proposed Work includes any use of the Alcoa Massena-East Plant and a description of how it would be used. The Contractor shall be responsible for all activities associated with siting, development, and restoration of the Alcoa Massena-East Plant or any additional properties, if needed, to support the Work. The Contractor shall be responsible for obtaining access agreements for any properties not owned by Arconic, including the Alcoa Massena-East Plant. Any such access agreements shall be developed in coordination with the Company and shall be subject to approval by the Company.

#### 1.06 ENVIRONMENTAL CONDITIONS

- A. Numerous investigation activities have been conducted to gather data necessary to support the Project. The data generated from these events include PCB sediment chemistry data, geotechnical data, biota tissue data, ice monitoring data, hydrologic data, hydrographic survey data, treatability testing data, and pilot testing of various remedial technologies.
- B. Contaminants of concern (COCs) were detected in environmental media samples collected from portions of the Grasse River and adjacent floodplains. The COCs consist of PCBs. Sediment COC concentrations vary with location and depth based on comprehensive testing of sediment chemical and physical properties.
- C. Detailed summaries of previous environmental investigations and results are provided in the reference documents listed in Section 00 31 00 – Available Project Information.

#### 1.07 EXISTING CONDITIONS

- A. The results of prior surveys and investigations are indicative of general conditions at their respective locations considering the sampling and survey equipment employed. Variations in the properties of the materials are to be expected. Information regarding the physical and chemical properties of materials to be removed or otherwise associated with the Work is

- provided in the supplemental reference information identified in Section 00 31 00 – Available Project Information. The information is based on field investigation and laboratory testing of the materials. The data and results of prior surveys and investigations reflect available information at the time of data collection, are approximate, and may have changed since the time of data collection. Although the results of such investigations are considered generally representative of conditions at their respective locations at the time of the investigation, local variations in the materials are to be expected and, if encountered, shall not be considered materially different within the purview of the Contract.
- B. The Contractor shall examine the work area and the reference materials and become thoroughly familiar with field conditions, and the types, characteristics, elevations, and slopes of sediment, soil, and debris that may be encountered. The Contractor's plan for dredging, dredged material transport, sediment processing, and capping shall incorporate measures to address the varying sediment and soil characteristics and conditions that may be encountered.
  - C. Debris and vegetation are present in the areas targeted for removal and capping. The Contractor shall examine the work area and the reference materials and conduct their own surveys and become thoroughly familiar with field conditions, and types and quantities of debris and vegetation that may be encountered and generated during the Contractor's operations. The Contractor's plan for dredging, dredged material transport, and sediment processing shall incorporate measures to manage vegetation and debris in a manner that does not adversely impact the dredging, dredged material transport, or sediment offloading/processing operations.
  - D. Subsurface investigation data provide information regarding conditions below the soil and sediment surface. The data were collected and compiled primarily for use during the Project design to determine dredging limits, sloping requirements, and other design items. These data, by their nature, cannot reveal all conditions existing on the Project Site and are provided to the Contractor for information purposes only. The Contractor shall understand that subsurface conditions may differ from those depicted on the available logs.
  - E. Cores, borings, and geophysical investigations have been advanced to collect geotechnical information within the work area. Copies of logs and geotechnical results are included in the supplemental reference information identified in Section 00 31 00 – Available Project Information.
  - F. Treatability testing, including sediment dewatering, solidification and stabilization, and elutriate treatment, has been completed to evaluate sediment characteristics, reagent use, and water treatment options during material processing for the purposes of preliminary design evaluations. Copies of initial testing and results are included in the supplemental reference information identified in Section 00 31 00 – Available Project Information.
  - G. Existing information pertaining to the horizontal and vertical location of utilities within the planned work area are provided on the Drawings for informational purposes only.
  - H. The Contractor is responsible for reviewing the information contained in the referenced documentation. The information is made available to the Contractor for information on factual data only and shall not be interpreted as a warranty of subsurface conditions whether interpreted from written text, logs, or other data.
  - I. If, during construction, conditions differing substantially from those indicated in the above-referenced information or on the Drawings are encountered, the Contractor shall promptly notify the Construction Manager in writing and shall not disturb such conditions until directed. Should subsurface conditions be found to vary substantially from the existing information, the Construction Manager and the Engineer will determine whether changes to the Drawings or Specifications are required.

**PART 2 – PRODUCTS (NOT USED)**

**PART 3 – EXECUTION (NOT USED)**

**- END OF SECTION -**

**SECTION 01 11 00**

**SUMMARY OF WORK**

**PART 1 – GENERAL**

**1.01 REFERENCED SECTIONS**

- A. Section 00 31 00 – Available Project Information
- B. Section 00 31 19 – Existing Condition Information
- C. Section 01 14 00 – Work Restrictions
- D. Section 01 33 00 – Submittal Procedures
- E. Section 01 35 29 – Health, Safety, and Emergency Response Procedures
- F. Section 01 40 00 – Contractor Quality Control
- G. Section 02 81 02 – Transportation and Disposal of Waste Material
- H. Section 31 23 23 – Capping and Backfilling
- I. Section 35 20 23 – Dredging

**1.02 REFERENCES**

- A. Record of Decision (ROD; EPA, April 2013)
- B. New York State Department of Environmental Conservation (NYSDEC) and U.S. Army Corps of Engineers (USACE) Joint Application Form
- C. Federal Clean Water Act, Section 404
- D. Federal Rivers and Harbors Act, Section 10
- E. State Use and Protection of Waters, New York State Environmental Conservation Law (ECL) Article 15
- F. Federal Coastal Zone Consistency Assessment Form, New York State Department of State Coastal Management Program

**1.03 DESCRIPTION**

- A. The Contractor shall furnish all labor, supervision, materials, services, insurance, tools, equipment, bonding, fuel, safety provisions, temporary facilities, decontamination facilities, and incidentals necessary to perform the Work in accordance with the Contract Documents, Drawings, and Specifications, as well as all applicable laws, permits, permit equivalency requirements, regulations, codes, Arconic facility requirements, access agreements, ordinances, and any other applicable standards. The Contractor shall account for any annual cost escalation in labor and materials.

1.04 SUBMITTALS (NOT USED)

1.05 PROJECT LOCATION

- A. The Project is located along the Grasse River in the Town and Village of Massena, New York. The remedial construction area consists of a 7.2-mile stretch of the river between the Massena Power Canal and the St. Lawrence River.
- B. The Project Site is defined as the entirety of the Grasse River, from the confluence of the Massena Power Canal to the mouth of the St. Lawrence River; select locations within the Arconic Massena-West Plant (including the Secure Landfill [SLF] and the designated access route to and from this area); the Staging Area located along Route 131; potential secondary staging or storage at the Alcoa Massena-East Plant as approved by the Construction Manager; any other staging or support areas as approved by the Construction Manager; the upland extent of all targeted dredge management units (DMUs); the upland extent of targeted floodplain removal areas; and any associated access areas.
- C. Contractor access to and use of the properties within or adjacent to the Limits of Work shall be in accordance with the Drawings and Section 01 14 00 – Work Restrictions. The Contractor's Work will be strictly monitored by the Construction Manager for compliance with these requirements. No access or activities by the Contractor shall be allowed outside of areas approved by the Construction Manager.

1.06 PROJECT DESCRIPTION

- A. The sediment remediation Project is being implemented to address polychlorinated biphenyl (PCB)-impacted sediment in the Grasse River. The Project is being implemented pursuant to a ROD for the Project Site that was issued by the U.S. Environmental Protection Agency (EPA) in April 2013. The ROD is provided as a reference document as described in Section 00 31 00 – Available Project Information.
- B. In general, the main components of the Work under the Contract are summarized below. Note that the list, provided below, shall not be considered all-inclusive of the Work to be completed by the Contractor under the Contract. This list is solely provided to give an overall summary of the Work to be performed. Detailed requirements for the Work are presented on the Drawings and in the Specifications.
  - 1. Final Remedial Design Support: The Contractor shall assist Arconic's engineering consultants in the development of the means, methods, and final details for the remedial design and in responding to agency comments on the remedial design documents. The Contractor's Work under this component is expected to involve meetings and conference calls with Arconic, Arconic's consultants, and possibly the regulatory agencies, as well as providing supplemental details related to the Contractor's means and methods.
  - 2. Pre-Construction Submittals: The Contractor shall prepare, submit, and revise (as necessary) all submittals and work plans required by the Specifications and in accordance with Section 01 33 00 – Submittal Procedures.
  - 3. Mobilization: The Contractor shall be responsible for mobilizing all labor, equipment, materials, supplies, and incidentals required to complete the Work in its entirety. This shall include any seasonal remobilization after periods of inactivity (e.g., winter shutdown). The Contractor shall also be responsible for identifying and acquiring all construction-related permits (separate from those provided by the Company) and notifications that may be necessary for the completion of the Project.

4. **Support Area Preparation and Maintenance:** The Contractor shall prepare the Staging Area and any other approved properties as needed to support the Work. The Contractor shall be responsible for designing and constructing any needed modifications or improvements to the Staging Area and other approved support areas. The Contractor shall also be responsible for cleaning and maintenance of the Staging Area and other approved support areas throughout the duration of the Project.
5. **Surveys:** The Contractor shall be responsible for performing upland and marine surveys to document conditions before, during, and after construction. The Contractor's upland surveys will serve to establish and maintain survey control, provide pre- and post-conditions surveys of the Staging Area and other support areas and document utilities. The Contractor's surveys will serve as the basis for verifying compliance with the dredging, floodplain removal, backfilling, and capping requirements in accordance with the Drawings and Specifications and for calculating progress and pay quantities related to the Work.
6. **Shoreline Vegetation and Tree Trimming and Removal:** Prior to the start of dredging within a DMU, the Contractor will be responsible for pruning, cutting, and removing vegetation and trees along the shorelines as necessary to complete the Work. Shoreline vegetation removal operations must comply with all Work requirements and restrictions detailed in Section 01 14 00 – Work Restrictions and must be performed sufficiently in advance such that they do not interfere or conflict with dredging production.
7. **Dredging and Dredged Material Transport:** The Contractor shall be responsible for dredging sediments in near shore areas to the elevations shown on the Drawings and electronic dredge prism files (discussed in Section 35 20 23 – Dredging) and for transporting the dredged materials to the Staging Area for offloading. It is expected the dredging operations will be performed using mechanical dredging equipment with an enclosed environmental clamshell bucket within a turbidity curtain. The Contractor shall also be required to remove vegetation and debris, as necessary, to achieve the required dredging elevations. The area to be dredged is approximately 25 acres. Approximately 60,400 in situ cubic yards of sediment are targeted for dredging (including side slopes). The allowable total dredging volume (including a 6-inch overdredge allowance) is approximately 85,000 in situ cubic yards. The final dredge volume may vary from that specified herein and will be based on pre-dredging hydrographic surveys and other factors. The Contractor shall also be required to perform additional dredging to address residual PCB concentrations based on post-dredge verification sampling to be performed by others. Dredging will not be complete until notice is provided by the Construction Manager after consultation with the EPA. Dredging will also be required at the Border Patrol Marina as shown on the Drawings. Dredging will be required as necessary to allow equipment access adjacent to the Staging Area loading/unloading area and in near shore areas to facilitate access to complete the dredging and backfilling operations. The Contractor shall implement best management practices (BMPs), environmental controls (including a turbidity curtain), and other measures to maintain compliance with environmental- and health and safety-based monitoring criteria.
8. **Floodplain Sediment/Soil Removal:** The Contractor shall be responsible for excavation of targeted sediments/soils to the depths shown on the Drawings in limited floodplain extents at five separate locations. The floodplain sediment/soil removal and handling methods shall be determined by the Contractor. To the extent possible, the Contractor shall perform the floodplain sediment/soil removal activities using on-water dredging equipment. The Contractor shall be responsible to perform pre-excavation clearing and grubbing, including ingress/egress routes necessary to access the removal locations, excavating the target material, preparing transport documentation, and transporting the excavated materials to the Staging Area for offloading. Following confirmation of removal operations, the

Contractor shall restore the excavated or otherwise disturbed shorelines, riverbanks, and access routes.

9. Dredged Material Offloading, Handling, Dewatering/Processing: The Contractor shall be responsible for dredged material offloading, handling, dewatering, and processing activities to meet the specified landfill criteria (see Section 02 81 02 – Transportation and Disposal of Waste Material). Following transport and docking at the offloading facility, dredged sediment, debris, and water accumulated in scows shall be offloaded into the Sediment Processing Area. Sediment and debris processing, segregation, management, and dewatering methods shall be determined by the Contractor. Processed sediments shall be sufficiently dewatered or stabilized to meet the requirements for transportation to, and disposal in, the SLF. Debris that shall be processed and sized, as necessary, to meet the requirements for appropriate disposal in the SLF or other approved stockpile area, as applicable. The Contractor shall be responsible for collecting and conveying water that accumulates in the Sediment Processing Area and water removed from scows to the water pretreatment system. The Contractor shall implement BMPs, environmental controls, and other measures to maintain compliance with environmental- and health and safety-based monitoring criteria.
10. Water Pretreatment: The Contractor shall be responsible for designing, mobilizing, installing, commissioning, operating, monitoring, maintaining, testing, winterizing, decommissioning, and demobilizing a temporary water pretreatment system to treat water generated during the dredging and dredged material handling activities. The water pretreatment system will be required to reduce total suspended solids and PCB concentrations to specified pretreatment criteria. Following pretreatment by the Contractor, the Contractor shall convey the pretreated water to Arconic Impoundment 005 for secondary treatment by others through Arconic's existing water treatment system prior to discharge. The Contractor shall be required to conduct annual hydrostatic pressure testing of the transfer line before use.
11. Transport of Dredged Material for Disposal: Following dredged material processing, the Contractor shall be responsible for transporting the dredged material (including debris) to the SLF for disposal. Debris and shoreline vegetation that have not come in contact with river sediment shall be segregated and transported to an approved stockpile area. Debris and shoreline vegetation that has come in contact with river sediment shall be segregated, processed to meet the landfill criteria, and transported for disposal at the SLF. The Contractor shall be responsible for loading, tarping, transporting, and unloading the material at designated disposal areas. Additionally, the Contractor shall prepare bills of lading and other documentation required for the transport operations. SLF operations and closure activities will be performed by others and are not part of the Contractor's scope. The Contractor shall be required to coordinate with the SLF Operations Contractor as part of material transport and disposal operations.
12. Post-Dredge Backfilling: Following dredging, the Contractor shall be responsible for placing backfill material in dredged areas to return the near shore area to the pre-construction grades (in most cases) in accordance with the Drawings and Specifications. Based on the targeted dredge areas, approximately 25 acres are planned for post-dredge backfilling to pre-construction grade. Different types of backfill materials are required based on design evaluations and as specified on the Drawings and in the Specifications. The Contractor shall be responsible for sourcing, purchasing, coordinating, scheduling, transporting, unloading, and stockpiling backfill materials in the Staging Area or other approved location, as necessary. The Contractor shall blend materials to meet the required specifications; test; load; transport; and place backfill materials to the required elevations and within the required tolerances in the accordance with the Drawings and Specifications. The Contractor shall implement BMPs, environmental controls (including use of a turbidity

curtain), and other measures to maintain compliance with environmental- and health and safety-based monitoring criteria described in the Specifications throughout procurement, handling, and placement of backfill materials.

13. Capping: The Contractor shall be responsible for constructing caps in the main channel of the river in accordance with the Drawings and Specifications (Section 31 23 23 – Capping and Backfilling). This component includes placement of a three-layer armored cap over approximately 49 acres (minimum total thickness of 25 inches), a two-layer armored cap over 7 acres, and an unarmored cap over 226 acres (minimum total thickness of 12 inches). The Contractor will be required to demonstrate cap placement within pilot test areas before full-scale placement. The Contractor shall be responsible for sourcing, purchasing, coordinating, scheduling, transporting, unloading, and stockpiling capping materials in the Staging Area or other approved location, as necessary. The Contractor shall blend materials to meet the required specifications; test; load; transport; and place capping materials to the required thicknesses and elevations and within the required tolerances in accordance with the Drawings and Specifications. The Contractor shall also be responsible for placing habitat material over portions of the main channel cap as specified. The Contractor shall implement BMPs, environmental controls, and other measures to maintain compliance with environmental- and health and safety-based monitoring criteria described in the Specifications throughout procurement, handling, and placement of cap materials.
  14. Habitat Features Construction/Shoreline Restoration: The Contractor shall be responsible for installation of certain habitat features after completion of dredging and capping, including restoration of excavated riverbanks and installation of anchored rootwads and rock clusters in certain portions of the river as shown on the Drawings. The Contractor shall also restore shoreline areas where dredging occurred or that were otherwise disturbed during the removal operations.
  15. Winterization: After each construction season, the Contractor shall be responsible for winterization and maintenance activities at the Staging Area and for any equipment and materials used for the Work. The Contractor shall manage stormwater and Project Site security and access at the Staging Area during the offseason period and prepare the same in advance and preparation for the upcoming construction season.
  16. Sediment Processing Area Decommissioning: After dredging and dredged material handling operations are complete, the Contractor shall be responsible for cleaning and decommissioning the exclusion zone at the Staging Area and for restoring the area to allow for use to support continued capping operations. All contaminated materials, including dredged sediment, shall be disposed of at the SLF and shall not be stored over a winter season at the Staging Area.
  17. Demobilization/Restoration: The Contractor shall be responsible for demobilizing all the labor, materials, equipment, and incidentals required to complete the Work in its entirety. The Contractor shall also be responsible for the performance of final cleaning and restoration activities for all areas affected by the Work, except for final Staging Area restoration, which is anticipated to be completed under a separate contract.
  18. Record Drawings: The Contractor shall be responsible for the preparation and submittal of construction documentation records and Record Drawings.
- C. Existing conditions at the Project Site are summarized in Section 00 31 19 – Existing Condition Information and shown on the Drawings.
- D. Certain reference information relating to conditions at the Project Site and associated data are available to the Contractor, but will not be part of the Contract Documents. This reference



information is listed in Section 00 31 00 – Available Project Information. The Contractor is responsible for reviewing the available reference information prior to submitting a Bid and executing the Contract.

- E. During all phases of the Work, the Contractor shall comply with Arconic's health and safety program requirements and Section 01 35 29 – Health, Safety, and Emergency Response Procedures.
- F. The Contractor shall develop and implement a Construction Quality Control Plan in accordance with Section 01 40 00 – Contractor Quality Control. The Contractor shall perform quality control surveys, testing, and inspections in the field to verify compliance of the Work and materials with the Drawings and Specifications. The Construction Manager will review the Contractor's quality control surveys, testing, and inspection results and may perform independent quality assurance surveys, testing, and inspections as needed.
- G. Arconic's objective is to complete the remedial construction activities in four construction seasons or fewer, with dredging activities completed during the first two construction seasons and capping-related activities completed in four construction seasons. If the Contractor believes that achievement of this objective is not feasible or can be improved upon, the Contractor's Bid shall include an evaluation of the schedule necessary to complete the required Work, to be detailed in the required Project milestone summary on the Bid Form. It is expected the Contractor may need to implement Work activities up to 24 hours per day and 6 days per week to accomplish this objective (see Section 01 14 00 – Work Restrictions for allowable work hours).
- H. The Contractor shall provide as part of their bid a milestone schedule summary. The Contractor shall provide planned start dates and completion dates for the major milestones, as well as other milestones identified by the Contractor that will aid in understanding and evaluating the bids. The Contractor shall provide specific dates to achieve the following general objectives:
  - 1. In Fall 2018, initiate mobilization to the Project Site and preparation of the Staging Area as needed to commence the staged construction pilot tests in 2018
  - 2. In Fall 2018, completion of the Chemical Isolation Layer and Gravel Filter Layer and commencement of Slope Grading Fill placement in the Staged Capping Test areas designated on the Drawings and described in Section 31 23 23 – Capping and Backfilling
  - 3. By September 30, 2019, completion of the Armor Layer and Modified Armor Layer portions of the required Staged Capping Test areas designated for staged construction on the Drawings and in accordance with Section 31 23 23 – Capping and Backfilling
  - 4. Before November 30, 2020, completion of all dredging and backfilling (including required first pass dredging and potential additional pass dredging directed by the Construction Manager)
  - 5. Before November 30, 2022, completion of all capping

#### 1.07 PERMITS/REGULATORY AUTHORIZATIONS

- A. The Company and its consultants are preparing a permit-equivalency package and will provide necessary information documenting that the requirements are being met for the Project. It is anticipated the permit-equivalency package will be submitted to the agencies in the third quarter of 2018, following submittal of the Final Design Report. Information provided by the Contractor (e.g., means and methods) will be incorporated into the permit equivalency package as necessary.

- B. It is anticipated the following permit-equivalency assessments or permit applications will be completed by the Company to demonstrate compliance with the otherwise required permits:
1. The Company will complete a Joint Application Form (NYSDEC and USACE) to satisfy the requirements of the Federal Clean Water Act (Federal Water Pollution Control Act; Section 404), Federal Rivers and Harbors Act (Section 10), and State Use and Protection of Waters (New York State ECL Article 15).
  2. The Company will complete the necessary documentation to utilize an existing State Pollutant Discharge Elimination System permit that is in place and references Grasse River remediation water.
  3. The Company will complete a Federal Coastal Zone Consistency Assessment Form to demonstrate compliance with the New York State Department of State Coastal Management Program.
  4. The Company will complete a floodplain assessment to determine the effects of the remedial action on the floodplain per the Floodplain Management Act.
  5. The Company will complete permit equivalency evaluations associated with threatened and endangered species, cultural resources, and wetlands.
- C. The Contractor shall adhere to all permit-equivalency requirements and any permits obtained by the Company.
- D. The Contractor shall be responsible for obtaining and adhering to other applicable federal, state, and local permits to complete the scope of Work, which may include a Dig Safely New York permit(s); a state or county Department of Transportation permit; water use or withdrawal permits; state or county sediment and erosion control permit; Stormwater Pollution Prevention Plan; Spill Prevention, Control and Countermeasures; and a local building permit(s). The Contractor shall provide any permit submittals to the Construction Manager for review and approval prior to agency submittal.
- E. The Contractor shall provide any permit submittals to the Company and the Construction Manager for review and approval prior to agency submittal.

**PART 2 – PRODUCTS (NOT USED)**

**PART 3 – EXECUTION (NOT USED)**

**- END OF SECTION -**

**SECTION 01 14 00**

**WORK RESTRICTIONS**

**PART 1 – GENERAL**

**1.01 REFERENCED SECTIONS**

- A. Section 01 35 29 – Health, Safety, and Emergency Response Procedures
- B. Section 01 35 43 – Environmental Protection
- C. Section 01 50 00 – Temporary Facilities and Controls
- D. Section 01 71 13 – Mobilization and Demobilization
- E. Section 01 72 00 – Decontamination of Equipment
- F. Section 02 72 00 – Water Pretreatment
- G. Section 31 13 13 – Selective Shoreline Vegetation Removal
- H. Section 35 02 00 – Marine Equipment and Marine Traffic Control
- I. Section 35 55 29 – Dredged Material Processing and Handling

**1.02 REFERENCES**

- A. Title 16 New York Codes Rules and Regulations (16NYCRR) Part 753

**1.03 DESCRIPTION**

- A. This Specification describes work restrictions and requirements at the Grasse River Project Site, including, but not limited to, allowable workdays and hours, construction access, and seasonal, environmental, and weather restrictions.

**1.04 SUBMITTALS (NOT USED)**

**1.05 GENERAL RESTRICTIONS AND REQUIREMENTS**

- A. The Contractor shall coordinate with all parties engaged in Project-related activities, including, but not limited to, the Company, the Construction Manager, property owners (in coordination with the Construction Manager), and other contractors during execution of Work to comply with Contract requirements and meet the intent of the design. The Contractor shall make appropriate accommodations and develop Work sequencing and scheduling to avoid disrupting or impeding ongoing operations of other shoreline and waterway users during implementation of the Work. The Contractor shall comply with restrictions regarding work hours and days, access to and use of properties where applicable, and coordination with occupants as specified herein.
- B. Hot work shall be minimized and shall not be performed without prior notification to, and approval from the Construction Manager.

- C. Unless approved by the Construction Manager, the use of explosives at the Project Site is not permitted.
- D. Burning of any materials at the Project Site is not permitted without prior approval from the Construction Manager.
- E. Any other hazardous activities or means and methods deviating from the Work scope provided on the Drawings and Specifications or deviating from approved Contractor work plans shall not be performed without prior notification to, and approval from, the Construction Manager.
- F. The Contractor is responsible to inform its personnel and the personnel of subcontractors and distributors that any lewd actions or comments and any racial or sexual comments directed toward any individual on the Project Site are strictly prohibited. Incidents of this type may result in immediate and permanent dismissal of the persons involved. Repeat offenses by the Contractor's personnel may lead to the dismissal of the Contractor or removal of the Contractor from future bid considerations.
- G. All designated smoking areas must be delineated by flagging tape or other means and be equipped with a cigarette butt disposal can and a fire extinguisher. Smoking is not permitted in areas where flammable liquids are handled.
- H. The Contractor shall ensure the Contractor's personnel employed on site become familiar with and obey applicable rules and regulations that govern the Project, including safety, fire, traffic, and security rules and regulations.
- I. Should any unforeseen, potentially hazardous condition become evident during the performance of the Work, it shall be the Contractor's responsibility to bring such to the attention of the Construction Manager for resolution verbally within 1 hour and in writing within 48 hours.
- J. The Contractor shall perform Work in a manner that will not disrupt neighboring properties. The Contractor must ensure that neighboring operations or activities are not disturbed, interrupted, or prohibited as a result of Work. The Contractor shall comply with the air and water quality requirements specified in Section 01 35 29 – Health, Safety, and Emergency Response Procedures and Section 01 35 43 – Environmental Protection.

#### 1.06 LOCAL ORDINANCES

- A. Work shall be performed in accordance with Village of Massena, St. Lawrence County, and State of New York regulations and ordinances.
- B. If complaints from the public, nearby residents, adjacent land owners, or other waterway users are received by the Construction Manager regarding interferences due to Work activities, then no further Work shall be performed upon notice from the Construction Manager until corrective measures are implemented and approved by the Construction Manager.

#### 1.07 IN-WATER WORK REQUIREMENTS AND RESTRICTIONS

- A. Due to harsh winter weather and seasonal ice floes, all in-water Work elements shall consider potential restrictions in activities or relocation of equipment during the winter season. The Contractor's schedule for the start and finish of in-water Work each construction season shall be approved by the Construction Manager.
- B. During the construction off-season, the Contractor shall winterize, demobilize, or secure all in-water equipment and temporary structures. The Grasse River has a history of ice jams and floes in the spring; the Contractor shall recognize this and account for these potential conditions

as part of their Winterization Plan (see Section 01 71 13 – Mobilization and Demobilization for additional requirements).

- C. Due to fish spawning and larval drift, no in-water dredging, backfilling, or capping activities shall be performed upstream of Transect 6 (T6) between April 1 and June 15 of each year.
- D. For in-water Work downstream of T6, all operations shall be sequenced such that the Work is staggered and does not span the full cross-sectional width of the river (e.g., bank-to-bank) along any transect.
- E. Dredging shall be completed upstream prior to capping.
- F. The Contractor shall not release debris, scrap, waste, or materials into the work area or the environment. All debris accidentally introduced into the environment shall be removed as soon as possible.

#### 1.08 NAVIGATION REQUIREMENTS AND IN-WATER ACCESS

- A. The Contractor shall, at no time, impede navigation in the Grasse River or St. Lawrence River. The Contractor shall allow passing vessels to maneuver past all in-water equipment, when required, to provide ongoing access to other vessels traveling within the Grasse River and St. Lawrence River.
- B. The Contractor shall coordinate directly with the U.S. Coast Guard (USCG), submit the required Notice to Mariners, and comply with all USCG regulations and requirements per Section 35 02 00 – Marine Equipment and Marine Traffic Control.
- C. The Company or the Construction Manager will provide direct coordination with the U.S. Border Patrol for all operations. The Contractor shall coordinate with the Construction Manager regarding all schedule and operations and shall follow approved schedules communicated to the Border Patrol.

#### 1.09 ALLOWABLE WORK DAYS AND HOURS

- A. Staging Area preparations prior to the start of in-water remediation may take place up to 12 hours per day and 6 days per week.
- B. Except as provided in Parts 1.09.C and 1.09.D, all remedial activities—including dredging, backfilling, capping, and associated Work at the Staging Area—may be performed 24 hours a day, 6 days a week. The seventh day of the week may be utilized by the Contractor for maintenance or to catch up on the schedule with the approval of the Construction Manager at least one week in advance. The Contractor may alter work hours only after receiving written approval from the Construction Manager.
- C. The Contractor shall conduct stormwater management and water pretreatment operations 24 hours per day and 7 days per week, as necessitated by field conditions, to treat stormwater and water produced by the dredging and dredged material handling operations. See Section 02 72 00 – Water Pretreatment and Section 35 55 29 – Dredged Material Processing and Handling.
- D. Transportation of any wastes/materials to the Secure Landfill (SLF) or other approved disposal areas at the Arconic Massena-West Plant shall only be performed during daylight hours.

- E. Work performed by each individual person shall not exceed the work hour limits in Section 01 35 29 – Health, Safety, and Emergency Response Procedures without prior written approval from the Construction Manager.
- F. All Work conducted during non-daylight hours shall be performed in accordance with all local ordinances and with the lighting requirements described in Section 01 50 00 – Temporary Facilities and Controls and Section 01 35 43 – Environmental Protection.
- G. All tree removal, shoreline vegetation trimming, and any associated chipping in accordance with Section 31 13 13 – Selective Shoreline Vegetation Removal, shall only be conducted between 7:00 a.m. and 5:00 p.m. local time, Monday through Friday.
- H. Delivery of import materials for capping or backfilling shall only be accepted during daylight hours due to back-up alarms and other equipment noises. If these noises can be prevented, as determined by the Construction Manager, approval for late-night deliveries will be considered by the Construction Manager.
- I. Loading of cap Armor Layer materials and riprap onto barges or scows shall only be performed during daylight hours due to anticipated excessive noise. If the noise can be prevented, as determined by the Construction Manager, loading of barges or scows will be considered by the Construction Manager.
- J. The Contractor shall ensure that any night work is not disruptive to the local community. On-river night shift activities shall be scheduled to avoid working adjacent to shoreline homes.
- K. Noise-generating work operations shall not be performed on Federal holidays or holiday weekends.

#### 1.10 ACCESS AND CONTRACT WORK AREA

- A. The Contractor shall notify the Company and the Construction Manager if access is deemed necessary for any additional properties to support the Work activities and shall provide a detailed description of the proposed use of the property. The Contractor shall provide such notification prior to initiating outreach to the property owner. The Contractor shall be responsible for all activities associated with siting, development, and restoration of any additional properties, if needed, to support the Work activities. The Contractor shall be responsible for obtaining access agreements for any properties not owned by Arconic. Any such access agreements shall be developed by the Contractor in coordination with Arconic and shall be subject to approval by Arconic.
- B. All Contractor access to the Staging Area from land shall be through the gates along Route 42 (Massena Center Road), unless written permission is granted from the Construction Manager.
- C. Trucks transporting dredged material from the Staging Area to the SLF or other approved disposal areas at the Arconic Massena-West Plant shall exit the Staging Area at the designated truck exit, travel southwest on Massena Center Road (Route 42), turn right onto Dennison Road, turn left onto Arconic property at the truck entrance along Dennison Road, and then follow Arconic's interior roads to the SLF. Trucks shall follow the same route when returning to the Staging Area.
- D. All land-based deliveries to the Staging Area shall arrive by vehicles travelling east on Route 42 (Massena Center Road) and turning right into the Staging Area. With the exception of trucks transporting materials to the SLF or other approved disposal areas at the Arconic Massena-West Plant, vehicles shall depart traveling east on Route 42 (Massena Center Road) upon exiting the Staging Area when possible to reduce road crossing traffic.

- E. The Contractor shall keep within the approved work area and designated avenues of ingress and egress.
- F. The Contractor shall keep access roads clean and in good working condition at all times to ensure the safety of the various users. If disturbed or damaged by the Contractor's activities, clean and repair driving surfaces.
- G. The Contractor shall design, construct, and maintain temporary access to and egress from the work area as required to complete the Work. This includes, but is not limited to, stairs, runways, ramps, ladders, docks, platforms, and other means independent of finished surfaces and in accordance with relevant local, state, and federal regulations.
- H. Speed Restrictions
  - 1. All Contractor and subcontractor vehicles shall be restricted to a speed limit of 15 miles per hour, or as marked, while traveling at the Staging Area and at the Arconic Massena-West Plant.
  - 2. The Contractor shall adhere to all posted speed limits on public roads.
  - 3. Vehicles on public roads shall comply with applicable roadway regulations.
  - 4. All marine equipment shall adhere to requirements described in Section 35 02 00 – Marine Equipment and Marine Traffic Control.
- I. Personal vehicles shall be allowed on the Staging Area in designated parking areas only, as directed by the Construction Manager. The Contractor is responsible for transport of personnel to designated Contract work areas within the Project Site, as required.
- J. The Contractor shall confine vehicle and equipment fueling, maintenance, and awaiting maintenance operations to areas approved by the Construction Manager. The Contractor shall provide these designated areas with measures that prevent contamination of stormwater runoff and groundwater. Measures may include, but are not limited to, covered or roofed areas, drip pans, use of spill and overflow equipment, berming, cleaning pavement surfaces to remove oil and grease, or draining all parts of fluids. Contractor-proposed measures shall be specified in the Environmental Protection Plan and Spill Prevention, Control, and Countermeasure Plan, as applicable, in accordance with Section 01 35 43 – Environmental Protection.
- K. Prior to maintenance, vehicles, vessels, and equipment shall be decontaminated in the Contamination Reduction Zone in accordance with Section 01 72 00 – Decontamination of Equipment.
- L. All Work shall be confined to the Project Site and completed to the lines, grades, and dimensions specified on the Drawings unless otherwise directed by the Construction Manager. All Work performed beyond designated limits without prior approval shall be corrected to the satisfaction of the Construction Manager at no additional cost to the Company.
- M. The maximum allowable ground pressure adjacent to the Staging Area is 3,900 pounds per square feet (psf) for a draft of 8 feet adjacent to the bulkhead and 2,700 psf for a draft of 10 feet adjacent to the bulkhead. The Contractor shall provide crane mats or other measures and shall provide and operate equipment as necessary to maintain compliance with these maximum allowable loadings.
- N. Stability evaluations indicate that acceptable factors of safety can be achieved with surcharge loading (e.g., from material stockpiling and/or equipment storage) of up to 1,000 psf at the

upper level of the Additional Capping Material Laydown Area. For slope stability reasons, stockpiles or equipment shall not be staged closer than 15 feet from the edge of the upper Additional Capping Material Laydown Area. The Contractor may propose exceptions to this requirement based on specific loading scenarios for Construction Manager approval.

- O. Any proposed access dredging by the Contractor shall be sufficiently clear from and shall not disturb the armored cap near the Alcoa East dock. Any proposed access dredging in this area shall be subject to prior written approval by the Construction Manager.
- P. The Contractor shall conduct vessel operations near the Alcoa East dock in a manner to minimize potential resuspension and disturbance to the existing armored cap due to vessel propeller wash or other actions. The Contractor shall coordinate operations near the Alcoa East dock with the Construction Manager.

#### 1.11 WEATHER RESTRICTIONS

- A. The Contractor shall evaluate the safety of vessel operations in all work areas proposed for vessel operations. The Contractor shall conduct an evaluation for each vessel to determine the range of water conditions the equipment can safely operate. The Contractor shall also provide an assessment of the qualifications and experience of the crew operating the vessel and working in water conditions similar to those that will be encountered during the Work.
- B. The Contractor shall monitor marine weather and marine forecasts and alerts daily to determine when forecasted conditions have the potential to impede the safe implementation of the Work.
- C. The Contractor shall plan and schedule the Work to limit losses related to difficult working conditions (e.g., weather conditions) that impede the safe implementation of the Work.
- D. The Contractor shall suspend or limit Work when unsafe conditions are anticipated or manifested (e.g., storms, violent winds, flow conditions, extreme wave events).
- E. During periods of poor visibility (e.g., fog or rain), operations on moving vessels shall be slowed or halted as necessary, to ensure the safety of Project personnel and the public. When visibility drops below 500 feet or less than the stopping distance of a vessel, all water-based moves shall stop. Barge transport will be prohibited when visibility is less than 2,000 feet, as determined by the individual tug boat captains, or as otherwise approved by the Construction Manager. Activities on stationary equipment and vessels may continue to operate, although operations may be slowed.

#### 1.12 REGULATORY REQUIREMENTS AND RESTRICTIONS

- A. The Contractor shall be responsible for understanding and complying with all required local, state, and federal permits (or permit equivalency) provided by the Company. In addition, the Contractor shall be responsible for understanding, obtaining, and paying all fees, and complying with all other permits required to complete the Work as shown on the Drawings and Specifications.

#### 1.13 PROTECTION OF EXISTING UTILITIES

- A. The Contractor shall strictly comply with all applicable requirements of 16NYCRR Part 753.
- B. Location of utilities shall be ascertained by the Contractor. The Contractor shall contact representatives of the respective public utilities and private companies and request that they physically mark the locations of any and all utilities in the work area at least 7 days prior to the Contractor conducting Work within 300 feet of that area.



- C. The Contractor shall provide the Dig Safely New York notification number to the Construction Manager and verify that utility clearance has been conducted prior to any intrusive activities.
- D. The Contractor shall exercise care to prevent disturbing or damaging any utilities that exist at the Project Site and that are to remain in service during and at the completion of the Work.
- E. The utilities shown on the Drawings are approximate and are based on information obtained several years prior to the start of the Work, and they do not represent exact locations and numbers of utilities. It is the responsibility of the Contractor to take all necessary precautions to investigate, locate, and document utilities as specified in this Specification.
- F. Sediment located in and around utilities shall be removed by the Contractor unless the Contractor is advised of a required setback by the utility owner, setback information is provided on the Drawings or in the Specifications, or the Contractor determines that a setback is necessary to safely conduct the Work. All proposed setbacks are subject to review and approval by the Construction Manager.
- G. The Contractor must promptly notify the Construction Manager if a utility-related object is discovered during construction or dredging operations that was not identified on the Drawings or previously located.
- H. In the event damage is caused to any utility, the Contractor shall notify both the appropriate utility company and the Construction Manager immediately and coordinate the repair of the utility with the utility company. The Construction Manager may stop all Work on the Project until repairs acceptable to the Construction Manager are completed. Any damage caused to utilities due to the Contractor's operations shall be the sole responsibility of the Contractor and be repaired or replaced at the Contractor's sole expense, with no additional cost to the Company.

#### 1.14 PROTECTION OF STRUCTURES AND SYSTEMS

- A. The Contractor shall exercise care and provide protection to avoid disturbing or damaging structures within or adjacent to the Limits of Work. Structures may include, but are not limited to, buildings, existing seawalls, bridge abutments and bridge components, docks, water intake systems, outfalls, and boat ramps. Any damage to existing features shall be repaired by the Contractor to the satisfaction of the Construction Manager at no additional cost to the Company.

#### 1.15 PROTECTION OF THREATENED AND ENDANGERED SPECIES

- A. Threatened and endangered species exist within the Limits of Work and adjacent vicinities. The Contractor shall follow all federal and state requirements for operations to reduce potential impacts to habitat and use of habitat by listed species.
- B. In-water operations shall follow the restrictions detailed in Parts 1.07.C and 1.07.D, which have been developed in coordination with EPA and NYSDEC to protect in-water species.

#### 1.16 EQUIPMENT AND VEHICLE OPERATION AND MAINTENANCE

- A. The Contractor's use of cranes and other mobile equipment shall comply with all inspection, training, operation, and maintenance requirements of the Arconic Site Conditions, including the Arconic Mobile Equipment Program.
- B. The Contractor shall maintain equipment and machinery used for the Work in good working order at all times. Machinery shall be free of any oil or fuel leaks.

- C. The Contractor shall inspect all equipment, machinery, vessels, and vehicles prior to being used on the Project and daily during the Work for cleanliness and condition. The Contractor shall keep an up-to-date register of equipment inspections, maintenance, and repairs.
- D. Machinery shall be equipped with adequate exhaust and anti-pollution systems to limit atmospheric emissions and noise (mufflers) and comply with all regulatory requirements.
- E. The Contractor shall not drive directly in the water with wheeled or rolling machinery or vehicles.
- F. The Contractor shall suspend equipment operation during fueling.

1.17 PRESERVATION AND RECOVERY OF HISTORIC, ARCHEOLOGICAL, AND CULTURAL RESOURCES

A. Cultural Resource Preservation Protocols

- 1. The Contractor shall participate in a pre-construction meeting with the Construction Manager, Project archaeologist, and others regarding the sensitivity of the archaeological site area and the objective of the preservation protocol.
  - 2. Prior to commencing in-river construction activities near the Massena Center Road Bridge (near T28), the Contractor shall place an appropriate fence or barrier, subject to approval by the Construction Manager, 15 feet from the bridge pier on both shorelines to mark the boundary of the archaeological resource. Intrusive activities shall not occur between the barrier and bridge pier on either shoreline. Following placement of the fence or barrier and prior to the start of any intrusive activities, the Construction Manager will inspect the demarcated line to ensure its proper placement.
  - 3. The Contractor shall confirm the vertical clearance between the river surface and the underside of the Massena Center Road Bridge decking and support system (estimated as approximately 50 feet) prior to any in-water work at T28. Once verified, the Contractor must maintain a minimum clearance of 15 feet from the underside bridge deck and support system. A visible barrier such as weighted cords (or something similar) shall be hung from the bridge decking if it is anticipated that construction activities will be within 25 feet of the underside of the bridge deck system. These cords shall be removed at the conclusion of the Project.
- B. Inadvertent Discoveries. If, during construction activities, the Contractor observes items that may have historic or archeological value, such observations shall be reported immediately to the Construction Manager so the appropriate authorities may be notified and a determination made as to their significance and what, if any, special disposition of the finds should be made. The Contractor shall cease all activities that may result in the destruction of these resources and shall prevent its employees from trespassing on, removing, or otherwise damaging such resources.
- C. Claims for Downtime due to Inadvertent Discoveries. Upon discovery and subsequent reporting of a possible inadvertent discovery of cultural resources, the Contractor shall seek to continue Work well away from, or otherwise protectively avoiding, the area of interest, or in some other manner that strives to continue productive activities in keeping with the Contract. Should an inadvertent discovery be of the nature that substantial impact(s) to the Project Schedule are evident; such delays shall be coordinated with the Construction Manager, and formal notice of delay provided in writing.

**PART 2 – PRODUCTS (NOT USED)**

**PART 3 – EXECUTION (NOT USED)**

**- END OF SECTION -**

**SECTION 01 31 00**

**PROJECT MANAGEMENT AND COORDINATION**

**PART 1 – GENERAL**

**1.01 REFERENCED SECTIONS**

- A. Section 01 32 16 – Construction Progress Schedule
- B. Section 01 33 00 – Submittal Procedures
- C. Section 01 35 29 – Health, Safety, and Emergency Response Procedures
- D. Section 01 40 00 – Contractor Quality Control
- E. Section 31 23 23 – Capping and Backfilling
- F. Section 35 20 23 – Dredging

**1.02 REFERENCES (NOT USED)**

**1.03 DESCRIPTION**

- A. The Contractor shall furnish labor, materials, and equipment necessary to plan and execute project management functions.
- B. The Contractor shall coordinate activities and manage resources as needed to construct the Project and conform to the requirements of the Contract.
- C. The Contractor shall manage and coordinate all activities of its own employees, subcontractors, suppliers, and fabricators.
- D. The Contractor shall coordinate with the Construction Manager to schedule meetings, events, and Work activities.
- E. The Contractor shall coordinate activities with the Construction Manager and other contractors and installers performing Work as part of the Project.

**1.04 SUBMITTALS**

- A. The following submittals shall be submitted in accordance with Section 01 33 00 – Submittal Procedures.
  - 1. List of Subcontractors. Submit a list of proposed subcontractors with company name, Work to be performed, primary contact person, safety contact person, street address, mailing address, email address, phone number, type of specialty, and estimated subcontract value.
  - 2. Contractor Signature Authority. Furnish a power of attorney or a notarized letter of authority from the Contractor identifying local representatives who are authorized to sign Contract Documents on behalf of the Contractor.

3. Daily Activities Reports. Prepare and submit to the Construction Manager each day a Daily Activities Report that, at a minimum, includes the information described in Part 3.05 of this Specification.

#### 1.05 PROJECT COORDINATION

- A. The Contractor shall coordinate scheduling, submittals, and all Work activities to ensure an efficient and orderly sequence for completion of interdependent construction elements.
- B. The Contractor shall coordinate the Work of all subcontractors and is responsible for all such Work performed.
- C. The Contractor shall establish onsite lines of authority and communications and shall comply with procedures for communications and submittals as described in the Specifications.
- D. Before the beginning of the Work, the Contractor shall organize a meeting at the Project Site with the personnel assigned to the Project and inform them of the contractual requirements in environmental and safety matters and review the Contractor's Health and Safety Plan.
- E. During the construction period, others may perform construction or maintenance work within the Project Site or in adjacent areas. The Contractor shall coordinate and schedule construction and operations of the Work with the Construction Manager and other contractors and installers to avoid problems or delays and enable efficient completion of the required Work.

#### 1.06 PROJECT MEETINGS

- A. The Contractor shall attend and participate in meetings with the Construction Manager and others as necessary to successfully complete the Work. At a minimum, the Contractor shall attend and participate in the following Project meetings (descriptions of these meetings are provided in Part 3 of this Specification):
  1. Pre-Construction Meetings
  2. Construction Kick-Off Meetings
  3. Weekly Progress Meetings
  4. Daily Construction Meetings
- B. The Contractor shall attend and participate in meetings required by Section 01 35 29 – Health, Safety, and Emergency Response Procedures, Section 01 40 00 – Contractor Quality Control, and other Specifications.

#### 1.07 RESPONSIBILITIES OF PARTIES

- A. Company
  1. Arconic is the Company responsible for implementation of the Project, including contracting, accounting, and purchasing. Arconic has final approval authority regarding modifications to the Contract and will provide overall direction to the Construction Manager and Engineer. The Construction Manager and Engineer will report to the Company.
- B. Construction Manager

1. The Construction Manager reports to the Company. The Construction Manager is authorized to represent the Company and act on the Company's behalf to administer the Project.
2. The Construction Manager, on behalf of the Company, is responsible for overall management related to the Project, overseeing implementation of the Work, communications with the Contractor, and administration of the Drawings and Specifications.
3. The Construction Manager will communicate directly with the Contractor to coordinate activities.
4. The Construction Manager will communicate and coordinate with the Company and Engineer, as necessary, during the Work. The Construction Manager will receive information directly from the Contractor and convey information, as appropriate, to the Company and Engineer. Certain submittals prepared by the Contractor shall require approval by the Company or Engineer. The Construction Manager will coordinate submittal reviews by the Company and Engineer.

C. Government Agencies and Project Stakeholders

1. The U.S. Environmental Protection Agency (EPA) is the lead regulatory agency for this Project Site.
2. Project Stakeholders. The EPA will receive input from other Project stakeholders, including the New York State Department of Environmental Conservation and the Saint Regis Mohawk Tribe.
3. The Company will initiate communications with EPA and the Project stakeholders.

D. Engineer

1. The Engineer has prepared the Drawings and Specifications and is responsible for the interpretation of the Drawings and Specifications. The Engineer will report to the Company. The Engineer, under the Company's management, will review proposed alterations or modifications to the Project design as formally requested by the Contractor and provide the results of that review to the Construction Manager.
2. The Engineer, Company, and Construction Manager will answer questions that arise regarding the interpretation of the Drawings and Specifications. During construction, the Engineer will review certain submittals prepared by the Contractor and may provide onsite observation services during the Project implementation by the Contractor. The Engineer will communicate directly with the Construction Manager, who will communicate with the Contractor.

E. Contractor

1. The Contractor is responsible for implementing and ensuring the completion of the Work, producing Record Documents and Record Drawings, and documenting the Work performed and the post-construction conditions.
2. The Contractor is responsible for procuring permits and approvals within the Contractor's scope.

3. The Contractor is responsible for procuring the services of subcontractors as necessary to complete the Work. The Contractor is responsible for the Work of the Contractor's subcontractors, including inspections, to verify that the Work performed by subcontractors is compliant with the requirements of the Contract.
4. The Contractor is subject to requirements of local, state, and federal agencies for implementation of the Work. Details pertaining to jurisdictional requirements governing the Work that are not specifically mentioned in the Contract or the Specifications shall not relieve the Contractor's obligation to comply with applicable regulatory and permit requirements.
5. The Contractor shall conduct certain monitoring activities throughout the Work. Data collected from monitoring by the Contractor shall be provided to the Construction Manager and used to provide documentation of conditions at the Project Site.

#### 1.08 INTERPRETATION OF DRAWINGS AND SPECIFICATIONS

- A. In the event the Contractor has questions or requires clarifications related to the Work or Contract or should it appear that the Work to be done or any matters relative thereto are not sufficiently detailed or explained on the Drawings or in the Specifications, the Contractor shall submit a written Request for Information (RFI) to the Construction Manager in a timely fashion to avoid impacting the Project schedule. Responses to RFIs will be provided to the Contractor within 5 business days.
- B. In the event of a discrepancy or conflict of the Contract requirements provided in the Specifications, Drawings, Design Report or other documentation provided as a component of the Contract, the Contractor shall submit a written RFI to the Construction Manager requesting clarification.
- C. The Drawings are intended to be illustrative and may not be an exact or a complete representation of actual field conditions or the actual finished Work. For the finished Work, the Contractor shall include all necessary extra material required to make each installation satisfactory and operable for its intended purpose, even though some items may not be specifically depicted on the Drawings.

### **PART 2 – PRODUCTS (NOT USED)**

### **PART 3 – EXECUTION**

#### 3.01 PRE-CONSTRUCTION MEETING

- A. The Construction Manager will schedule and conduct a pre-construction meeting prior to the commencement of Work at the Project Site. The pre-construction meeting will be held after Notice of Award, but prior to the start of Work at the Project Site. A separate pre-construction meeting will be scheduled prior to the start of Work each construction season. The Construction Manager will notify the Contractor of the time, place, and agenda for the pre-construction meetings.
- B. The Construction Manager will prepare and distribute an agenda prior to the pre-construction meetings. The anticipated agenda includes, but is not limited to, the following items:
  1. Introduction and Background
    - a. Meeting Purpose

- b. Arconic Representatives
- c. Contractor Representatives
- 2. Safety and Health
  - a. Arconic Policy
  - b. Contractor Safety Program
  - c. Site Safety Orientation
  - d. Human Performance-Based Safety Program
  - e. Safety Datasheets
- 3. Environmental
  - a. Arconic Policy
  - b. Contractor Environmental Control Plan
  - c. Stormwater Pollution Prevention Plan Requirements
- 4. Construction
  - a. Scope of Work
  - b. Contractor and Arconic Furnished Temporary Facilities and Equipment
  - c. Permits
  - d. Submittal Requirements
  - e. Work Coordination
  - f. Quality Control (QC) and Inspections
  - g. Subcontractors
  - h. Security Requirements
- 5. Construction Schedule and Progress Reporting
  - a. Project/Construction Schedule
  - b. Three- to Four-Week Rolling Schedule
  - c. Progress Review Meetings
  - d. Daily Reports Required
- 6. Quality Assurance (QA)/QC



- a. Arconic Role
  - b. Contractor Role
- 7. Drawings
  - a. Distribution of Drawings and Specifications
  - b. RFIs
  - c. Contractor Drawing Submittals, Project Record Documents
- 8. Contract Management
  - a. Correspondence
  - b. Insurance and Bonds
  - c. Contract Change Procedures
  - d. Payments
  - e. Contract Closeout Procedures
- 9. Questions and Answers
- C. The pre-construction meeting will include the following attendees:
  - 1. The Contractor's key management staff, including, but not limited to, the Contractor's Project Manager, Superintendent, Construction Quality Control (CQC) Manager, and Site Safety and Health Officer (SSHO)
  - 2. Key management staff for all major subcontractors and suppliers; the Contractor shall be responsible for coordinating with key subcontractors and suppliers
  - 3. Company's representatives
  - 4. Construction Manager
  - 5. Engineer
  - 6. EPA and other agency representatives
- D. Pre-Construction Meeting Minutes. The Construction Manager will prepare meeting minutes for the pre-construction meetings. The Construction Manager will distribute the meeting minutes to the Contractor and other meeting attendees for review. The parties shall review the meeting minutes for accuracy and completeness and return a signed copy to the Construction Manager.
- E. At a minimum, the Contractor shall prepare and submit the following prior to pre-construction meetings:
  - 1. Preliminary Project schedule (see Section 01 32 16 – Construction Progress Schedule)

2. List of subcontractors (see Part 1.04.A.1 of this Specification)
3. Contractor signature authority (see Part 1.04.A.2 of this Specification)
4. Submittal register (see Section 01 33 00 – Submittal Procedures)
5. Presentation materials to support the Pre-Construction Meeting, including figures, PowerPoint slides, photographs, and other specific details in coordination with the Construction Manager

### 3.02 CONSTRUCTION KICK-OFF MEETING

- A. The Construction Manager will schedule and conduct a construction kick-off meeting prior to the commencement of Work at the Project Site. The construction kick-off meeting will be scheduled, convened, and conducted at the Project Site by the Construction Manager after the pre-construction meeting and prior to starting physical construction.
- B. This meeting is primarily for the onsite Construction Manager to coordinate the planned field work activities with the Superintendent, SSHO, CQC Manager, and others performing QC.
- C. A separate construction kick-off meeting will be scheduled prior to the start of Work each construction season. The Construction Manager will notify the Contractor of the time, place, and agenda for the construction kick-off meeting.
- D. Purposes of the construction kick-off meeting include the following:
  1. Achieve mutual understanding between the Construction Manager and the Contractor of the QC requirements
  2. Jointly review submitted work plans and discuss any outstanding issues
  3. Discuss Drawings, Specifications, schedule, and documentation
  4. Establish a collaborative working relationship between the Contractor's QC staff and the Construction Manager

### 3.03 WEEKLY PROGRESS MEETINGS

- A. The Construction Manager will schedule and lead progress meetings at weekly intervals.
- B. Weekly progress meeting attendance is required for the Construction Manager, the Superintendent, the SSHO, the CQC Manager, and others as appropriate per the agenda topics for each meeting. Representatives of the Company, Engineer, EPA, and other agencies may also attend weekly progress meetings.
- C. The weekly progress meetings will be conducted in the field office at the Project Site.
- D. The Construction Manager will set the weekly meeting agenda, which, at a minimum, will include the following items:
  1. Review of action items from previous meetings
  2. Health and safety issues

3. Contractor's Summary of Work Performed
  4. QA/QC
  5. Schedule, including review of Contractor's 3-week look-ahead schedule for planned activities, required equipment, required materials, and manpower requirements
  6. Equipment and material status
  7. Contractor critical items and interface
  8. Correspondence and documentation
  9. Review of old business
  10. New business
  11. Commercial
- E. The Construction Manager will record minutes and distribute copies by the end of the following workday to all meeting participants.

#### 3.04 DAILY CONSTRUCTION MEETINGS

- A. The Contractor shall conduct a daily construction meeting (frequently referred to as a tailgate meeting) at the beginning of each day and each shift change to update attendees on the previous day or shift's activities and discuss the work plan for the day and future concerns or plans.
- B. The Construction Manager, the Superintendent, the SSHO, the CQC Manager, onsite Contractor personnel, onsite subcontractor personnel, and others as appropriate are required to attend.
- C. The Contractor shall be responsible for developing the daily meeting agenda. At a minimum, the meeting agenda shall include the following items:
  1. The previous day's activities, including safety incidents or observations locations and type of work performed; approximate areas or volumes dredged, capped, and backfilled, if applicable; tonnage of material transported to the Secure Landfill (SLF); approximate tonnage and type of material brought to the Project Site; approximate volume of treated water discharged; any downtime that occurred; and any community interaction
  2. The current day's planned activities, including the planned work areas; an estimation of area or volume to be dredged, capped, and backfilled, if applicable; and the type and amount of material expected to be delivered to the Project Site
  3. Health and safety, including planned activities for the day or shift, the high-risk task of the day, issues and observations, and planned corrective actions
  4. Environmental protection, including planned activities for the day or shift, issues and observations, and planned corrective actions
  5. QA/QC, including inspection or test results, planned QC activities for the day or shift, issues and observations, and planned corrective actions

6. Any anticipated deviations from the Contract requirements
  7. Future problems that may arise
- D. The Contractor shall prepare a meeting summary form and document the specific topics discussed during each daily construction meeting. The daily construction meeting form shall be included with each Daily Activities Report described in Part 3.05.

### 3.05 DAILY ACTIVITIES REPORT

- A. The Contractor shall review the progress and quality of the Work daily and prepare and submit to the Construction Manager a Daily Activities Report as described herein. The Daily Activities Report shall be submitted to the Construction Manager by 12:00 p.m. (local time) the following workday.
- B. At a minimum, the Daily Activities Reports shall include the following information:
1. Date, time, location, type of construction activity, and work hours
  2. A complete list of all personnel and duration of time spent on site, including any subcontractors, construction oversight, and any visitors to the Project Site
  3. Daily weather conditions detailing, at a minimum, wind, precipitation, and temperature, including any weather-related delays or anticipated delays to scheduled Work
  4. Health and safety information, including health and safety issues, incidents, concerns, and actions
  5. Environmental protection information, including environmental issues, incidents, concerns, and actions
  6. A summary of work performed, including any subcontractor work
  7. A comprehensive list of equipment used that day and hours of use for each piece categorized by land-based and marine-based operations
  8. A summary of trucking operations, including the number of trucks and recorded tonnage of delivery of backfill or cap materials to the Project Site, and the transportation of dredged material to the SLF
  9. Daily and cumulative estimated quantities for dredging, dredged material processing, including stabilization materials, backfilling, capping, waste transport, and water treatment
  10. Estimated tonnage and volume of material in onsite staging areas at the end of the day
  11. A summary of QC inspections and testing performed and results received
  12. Any notification from the Construction Manager of nonconformance
  13. Equipment performance, maintenance, and hours of downtime due to equipment breakdowns
  14. Delays encountered and relevant details of each delay, such as the cause, resolution, and measures implemented to avoid additional delays

15. A list of completed, in-progress, and scheduled surveys, including the survey location, type, and anticipated submittal dates
  16. All daily logs from dredging, backfilling, and capping operations as described in Section 35 20 23 – Dredging and Section 31 23 23 – Capping and Backfilling
  17. Daily Construction Meeting summary form as described in Part 3.04.D of this Specification
  18. Construction photographs that represent activities and conditions covered in the report
  19. Other pertinent information related to the day's activities
  20. Daily and cumulative estimated volumes of surface water withdrawal and discharge by the Contractor.
- C. Additional requirements for the Daily Activities Report are included in other Specifications.

**- END OF SECTION -**

**SECTION 01 32 16**

**CONSTRUCTION PROGRESS SCHEDULE**

**PART 1 – GENERAL**

1.01 REFERENCED SECTIONS

- A. Section 01 33 00 – Submittal Procedures

1.02 REFERENCES (NOT USED)

1.03 DESCRIPTION

- A. This Specification describes the required documentation and submittal procedures for construction progress schedules.

1.04 SUBMITTALS

- A. Preliminary Project Schedule. The Contractor shall submit electronic files of the Preliminary Project Schedule in the source software format and as a PDF to the Construction Manager in accordance with Section 01 33 00 – Submittal Procedures. The Preliminary Project Schedule shall include:

1. Specific tasks, dates, and the critical path necessary for completion of the Project within the Contract time limits.
2. All significant design, manufacturing, construction, and installation activities.
3. Sufficient time for cleaning, punch-list review, and completion of punch-list items prior to the substantial completion date.
4. Clear relationship between the Work items and the starting and completion dates, as well as details of the Work within the timeframe shown.

- B. Detailed Progress Schedule. The Contractor shall submit the initial Detailed Progress Schedule in accordance with Section 01 33 00 – Submittal Procedures. After approval of the initial Detailed Progress Schedule, the Contractor shall submit an updated Detailed Progress Schedule prior to each weekly progress meeting. The Contractor shall submit electronic files for each Detailed Progress Schedule in the source software format and as a PDF.

1. The format for all schedules shall be graphical Gantt (bar) charts using the critical path method with the following characteristics:
  - a. Each major Work element shall be represented. Significant subtasks shall be broken out from each major Work element.
  - b. The time scale shall indicate the first workday of each week.
  - c. The diagram shall allow space for notations.
  - d. The minimum diagram size shall be 11 by 17 inches.

- e. Tasks shall be listed in chronological order with the activities that are to occur first at the top of the schedule.
  - f. The critical path shall be clearly indicated.
2. Each Detailed Progress Schedule shall show:
- a. The complete sequence and schedule for each major component of the Work.
  - b. All task items in sufficient detail to demonstrate how the Contractor will execute and sequence the Work.
  - c. The dates for the beginning and completion of each major Work element and the sequence of significant subtasks, as well as the total time period of performance for each activity and float dates.
  - d. Dependencies among tasks.
  - e. All required milestone and completion dates as set forth in the Contract and the activities to fulfill each milestone.
  - f. Allowances for estimated downtime related to known or expected conditions that affect schedule.
  - g. Periods of planned inactivity due to work restrictions detailed in Section 01 14 00 – Work Restrictions.
3. Each updated Detailed Progress Schedule shall include the following, at a minimum:
- a. Up-to-date and accurate progress for each activity presented in the previously accepted Detailed Progress Schedule.
  - b. Actual activity commencement dates.
  - c. Planned completion dates for each activity and remaining duration in workdays.
  - d. Actual completion dates (as applicable).
  - e. The estimated percent complete for each item, as of the last day of the previous week.
  - f. Updates, as applicable, to activity durations, changes in logic connections between activities, changes in constraints, changes to activities commencement or completion dates, changes to activities descriptions, and activity additions and deletions.
  - g. The baseline schedule so progress can be tracked.
  - h. Changes occurring since the previous schedule submission, including:
    - 1) Changes in scope.
    - 2) Activities modified since previous submission.
    - 3) Revised projections of progress and completion.

- 4) Other identifiable changes.
- i. A narrative report, as applicable, to define:
  - 1) Problem areas, anticipated delays, and impacts on schedule.
  - 2) Corrective action recommended and its effect.
  - 3) Effect of changes on subcontractor schedules.
- C. 3-week Look-Ahead Schedule. The Contractor shall submit 3-week look-ahead schedules for planned activities, required equipment, required materials, and manpower requirements. The Contractor shall provide copies of the 3-week look-ahead schedule to the Construction Manager at each weekly progress meeting. The Contractor shall also submit electronic files of the 3-week look-ahead schedule in the source software format and as a PDF. Each 3-week look-ahead schedule shall include sufficient detail to indicate the current and near-term (at a minimum of 3 weeks) Work to be performed and be reconcilable to the activities within the latest approved Detailed Progress Schedule. At a minimum, each 3-week look-ahead schedule shall include the following information:
  1. Activity identification number, description, and original duration and planned workdays.
  2. Additional information beyond the Detailed Progress Schedule to depict the specific daily activities and coordinate the Work required by others.
  3. Actual activity commencement dates and planned completion dates for progress to date, updated completion dates (as necessary), remaining duration in workdays, and percent complete.
  4. A list of all subcontractors that will perform Work in the upcoming 3 weeks, including subcontractors' names, Work activities, duration, percent complete, and planned/actual completion date.
  5. A labor forecast summary of workers sorted by subcontractor and trade and a total of all workers planned to be at the Project Site for each week.
- D. Recovery Schedule. If the Contractor fails to complete an activity by its scheduled completion date and this failure is anticipated to or has the potential to extend the Contract Times or Milestones, the Contractor shall, within 7 calendar days of such failure, submit a Recovery Schedule along with a written statement as to how the Contractor intends to correct nonperformance and return progress to comply with the original period of performance.
- E. Cash Flow Projection. The Contractor shall submit a projected schedule illustrating monthly cash flow by line item per month for the duration of the Project in a form acceptable to the Construction Manager. The Cash Flow Projection shall be formatted to allow for major task rollups where applicable. The Contractor shall update the Cash Flow Projection monthly and indicate variances from projected to actuals for the previous month.
- F. If Construction Manager finds that a submitted schedule does not comply with Project requirements, the Construction Manager will notify the Contractor in accordance with Section 01 33 00 – Submittal Procedures and the Contractor shall resubmit a revised schedule to the Construction Manager within 5 calendar days of the notification.



1.05 UPDATING SCHEDULES

- A. The Contractor shall maintain schedules and record actual start and finish dates of completed activities.
- B. The schedules shall indicate progress of each activity to date of revision, with projected completion date of each activity. The Contractor shall update diagrams to graphically depict current status of Work.
- C. The schedule shall identify activities modified since previous submittal, major changes in Work, and other identifiable changes.
- D. The schedule shall include changes required to maintain date of total completion.
- E. Updates to the Detailed Progress Schedule will be reviewed during weekly progress meetings. Failure to provide these updates may result in Work shutdown or delays in payment until such updates are received.
- F. The Contractor shall prepare a narrative report to define problem areas, anticipated delays, impact on schedule and corrective action taken or proposed and its effect.
- G. If the Contractor's progress is delayed for any reason, the Contractor shall prepare and submit a Recovery Schedule indicating the actions necessary to complete the Work within the original period of performance.

**PART 2 – PRODUCTS (NOT USED)**

**PART 3 – EXECUTION (NOT USED)**

**- END OF SECTION -**

**SECTION 01 33 00**

**SUBMITTAL PROCEDURES**

**PART 1 – GENERAL**

**1.01 REFERENCED SECTIONS**

- A. Section 01 31 00 – Project Management and Coordination
- B. Section 01 32 16 – Construction Progress Schedule

**1.02 REFERENCES (NOT USED)**

**1.03 DESCRIPTION**

- A. This Specification includes requirements and procedures for submittals, including work plans, schedules, shop drawings, product data, samples, test results, surveys, and other submittals as specified in individual Specification sections.
- B. The Contractor shall submit required materials and Contract Documents to the Construction Manager for review in accordance with the Contract. The Construction Manager will administer and control the review and processing of the submittals. Certain submittals will be reviewed by the Company or the Engineer, which will be coordinated by the Construction Manager. Any reviews performed by the Company or the Engineer will be transmitted by the Construction Manager to the Contractor. The Construction Manager will determine which submittals will be subject to review by the Company and the Engineer.
- C. Attachment A at the end of this Specification includes a list of submittals that are specified in the Specifications and Drawings and identifies the required submittal timeframes.

**1.04 SUBMITTAL REQUIREMENTS**

- A. Required submittals are listed in Attachment A at the end of this Specification; this list will serve as the preliminary Schedule of Submittals. Required timeframes for submittals are indicated, as applicable. The Contractor shall review Attachment A for accuracy and completeness. In the event of a discrepancy between Attachment A and the Specifications or Drawings, the Contractor shall notify the Construction Manager of the inconsistency in writing. In addition, the Contractor shall submit any proposed revisions to the Construction Manager for review and approval. The Construction Manager has final approval authority over any modifications to the Schedule of Submittals.
- B. The Contractor shall submit all items identified in the Specifications.
- C. The Construction Manager may request submittals, in addition to those listed, when deemed necessary to adequately describe the Work covered in the respective sections. The Contractor shall provide these requested submittals at no additional cost to the Company.
- D. Units of weights and measures used on all submittals shall be the same used on the Drawings.
- E. Each submittal shall be complete and in sufficient detail to allow ready determination of compliance with Contract requirements.

- F. Prior to submittal, all items shall be checked and approved by the Contractor's Construction Quality Control (CQC) designee, and each item shall be stamped, signed, and dated by the CQC designee, indicating action taken.
- G. Proposed deviations from the Contract requirements shall be clearly identified.
- H. Submittals shall include items such as the Contractor's, manufacturer's, or fabricator's drawings; descriptive literature including (but not limited to) catalog cuts, diagrams, operating charts or curves; test reports; test cylinders; samples; operation and maintenance manuals, including parts list; certifications; warranties; and other such required submittals.
- I. Submittals requiring Construction Manager approval shall be scheduled and made prior to the activity or acquisition of the material or equipment covered thereby and before any Work described is initiated. The Contractor shall begin no fabrication or Work requiring the submittals until return of the submittals with the Construction Manager approval/comments. No delays, damages, or time extensions will be allowed for time lost in late submittals.
- J. The Contractor shall submit a Submittal Register that includes, at a minimum, a complete listing of all required and proposed submittals (see Attachment A) and all other proposed submittals, including the subject matter of each submittal (submittal name), corresponding Specification name and reference (number and subpart), preparer, applicable unique tracking numbers, and planned dates of submission. The Submittal Register shall identify which submittals are associated with time-critical or long-lead items and indicate the dates by which the Construction Manager's review will be needed to meet delivery dates. The Contractor shall be responsible for maintaining and updating the Submittal Register weekly to document the actual dates of submissions, listing any subsequent resubmissions, and the Construction Manager's review action. The updated Submittal Register shall be distributed on a weekly basis along with the Detailed Progress Schedule (see Specification Section 01 32 16 – Construction Progress Schedule) to be discussed at the weekly progress meeting (see Specification Section 01 31 00 – Project Management and Coordination).
- K. The Contractor shall clearly identify variations from requirements of the Drawings and Specifications in all submittals. Failure to identify variations from the Drawings and Specifications does not relieve the Contractor of responsibilities to comply with the Drawings and Specifications.
- L. The Contractor shall clearly identify any proposed substitutions for materials or modifications to the procedures specified on the Drawings and in the Specifications in each submittal. The Contractor shall state product or system limitations that may be detrimental to successful performance of completed Work.
- M. If a submittal requires an engineer's stamp, the Contractor shall ensure that the submittal has been prepared and signed by a professional engineer licensed in New York State.

#### 1.05 SUBMITTAL CLASSIFICATION

##### A. Submittals are classified as follows:

- 1. Construction Manager Approval Required. Construction Manager approval is required for extensions of design, critical materials, deviations, equipment whose compatibility with the entire system must be checked, and other items as designated by the Construction Manager. If Construction Manager approval is required, the submittal will be reviewed and returned to the Contractor with a defined designation (Approved, Approved as Noted, Revise and Resubmit, or Rejected). See Part 1.08 for additional details.

2. Information Only. All submittals not requiring Construction Manager approval will be for information only.
- B. All costs associated with preparing and revising submittals shall be at the expense of the Contractor, unless otherwise noted.
- C. Payment for materials incorporated in the Work will not be made if the required submittals have not been approved.

#### 1.06 PROCEDURES

- A. The Contractor shall deliver submittals to the Construction Manager at the address requested by the Construction Manager.
- B. The Contractor shall direct inquiries to the Construction Manager regarding the procedure, purpose, or extent of any submittal if clarifications are required prior to submittal to avoid delays in approval.
- C. The Contractor shall submit submittals in ample time for review and response and in accordance with Attachment A and the Contractor's approved Submittal Register.
- D. The Contractor shall provide a separate submittal for each defined feature of the Work requiring a submittal. Where multiple Specifications relate to the same system or element and are being provided from the same source, a single combined submittal is acceptable.
- E. The Contractor shall coordinate submission of related items and group submittals of related products in a single transmission.
- F. The Contractor shall coordinate submittals to avoid conflicts between various items of Work and provide submittals to not interfere with the Project schedule.
- G. Prior to submission to the Construction Manager, the Contractor shall verify compatibility of the submittal with requirements of the Drawings and Specifications and shall revise non-conforming submittals to prepare for revision rather than submitting for review by the Construction Manager. Incomplete or improperly packaged submittals and submittals from sources other than the Contractor will not be accepted.
- H. The Contractor shall deliver submittals under acceptable transmittal form which identifies:
  1. Submittal date.
  2. Project Name and Contractor.
  3. Subcontractor and major supplier, when appropriate.
  4. Reference to the applicable Contract Documents, Drawing, or Specification section numbers, as appropriate.
  5. The Contractor's certification, signed or initialed, certifying that review, approval, verification of product selections and designations, compatibility with field conditions and dimensions, adjacent construction, and coordination of information are in accordance with requirements of the Drawings and Specifications.
  6. Variations from Contract Documents when variations are included in the submittal.

7. Whether the submittal requires approval or is for information only.
- I. The Contractor shall submit specified number of copies of submittal.
- J. For Work that does not have a submittal specified on the Drawings and in the Specifications, the Contractor shall document any proposed variation from the Drawings and Specifications in the form of a submittal consistent with this Section. Such submittal shall be submitted to Construction Manager for review at least 15 calendar days prior to the planned start date of the activity affected by the proposed variation.
- K. Approval of Submittals
  1. Construction Manager's review of submittals will be as described in Part 1.08 of this Specification.
  2. Construction Manager's approval of the Contractor's submittals is required prior to the start of construction for that Work element. The Construction Manager reserves the right to require the Contractor to make changes to a submittal or operations, including removal of personnel, as necessary, to obtain the quality specified.
  3. The Construction Manager may elect to stop Work activities at the Project Site if submittals have not been submitted or are not of acceptable quality (as determined by the Construction Manager) and per the schedules specified herein. Any delays related to submittal approvals shall not allow the construction schedule to be extended and shall not be reason to increase the Contract price.
- L. Resubmission of Submittals
  1. When revised for resubmission, changes made since the previous submission shall be shown in redline/strikeout and/or other means to track changes made to previous submittal, unless otherwise approved by the Construction Manager in writing.
  2. Resubmissions shall be required within 5 working days of return from the Construction Manager's review, unless otherwise approved by the Construction Manager in writing.
  3. Revised submittals shall be submitted following the procedures specified for initial submittals.
  4. Resubmittals shall include the original tracking number with an alphabetic designation (i.e., "A" for the first resubmission or "B" for the second resubmission, and so on).
  5. Resubmittals are required until all comments by the Construction Manager are addressed. All changes made in the resubmittal must be documented and must also indicate any changes made other than those requested by Construction Manager.
  6. Final approved submittals shall be provided without redline/strikeout.
- M. Failure to Submit Acceptable Submittals
  1. If the Contractor fails to submit an acceptable submittal within the time prescribed, construction shall not start. If an acceptable final plan is not submitted within a reasonable time, as determined by the Construction Manager, the Construction Manager may order the Contractor to stop Work until an acceptable plan has been submitted. Any such

stop-work order shall not be considered a suspension of Work for an unreasonable period, and the Contractor shall not be entitled to pay adjustments as a result of the stop-work order. Failure to comply with the above requirements, within the time prescribed, will be considered a condition endangering the performance of the Contract and may be considered grounds for termination of the Contract.

- N. The Contractor must adhere to approved submittals; deviation from the approved submittals must be pre-approved by Construction Manager in writing.
- O. The Contractor shall, as appropriate, distribute copies of reviewed submittals to the personnel implementing the Work and shall instruct those parties to promptly report inability to comply with submittal requirements. Deviations from approved submittals must be pre-approved by the Construction Manager in writing. After submittals have been approved by the Construction Manager, no resubmittal for the purpose of substituting materials or equipment will be given consideration, unless accompanied by an explanation regarding why a substitution is necessary.
- P. Notification of Changes
  - 1. After acceptance of any submittal, the Contractor shall notify the Construction Manager in writing a minimum of 7 calendar days prior to any proposed change. Proposed changes are subject to approval by the Construction Manager and the associated activity may not commence until notified by the Construction Manager.

#### 1.07 WORK PLANS, SHOP DRAWINGS, PRODUCT DATA, SAMPLES, AND TEST REPORTS

- A. The Contractor shall submit work plans, shop drawings, product data, samples, test reports, and other pertinent information in sufficient detail to show compliance with specified requirements.
- B. The Contractor shall check, verify, and revise submittals as necessary for conformance with Contract Documents and compatibility with field conditions and dimensions and adjacent construction Work.
  - 1. The Contractor shall determine and verify quantities, dimensions, specified design and performance criteria, materials, catalog numbers, and similar data.
  - 2. The Contractor shall coordinate each submittal with other submittals and with the requirements of the Contract Documents.
  - 3. The Contractor shall present submittals in a clear and thorough manner.
  - 4. The Contractor shall title each shop drawing with the Project name. The Contractor shall identify each element of the shop drawings with reference number.
- C. After completion of checking, verification, and revising, the Contractor shall stamp, sign, and date submittals indicating review and approval, then submit to the Construction Manager.
  - 1. Stamp and signature shall indicate the Contractor has satisfied the submittal's review responsibilities and constitutes the Contractor's written approval of the submittal.
  - 2. Submittals without the Contractor's written approval will be returned for resubmission.

- D. Work Plans. The Contractor shall prepare and submit the required work plans to the Construction Manager for review within the timeframe indicated on Attachment A. Work plan requirements are included in individual Specifications. Work relevant to the individual work plans shall not be performed until the work plan has been approved by the Construction Manager. Each work plan shall be indexed and referenced by a Table of Contents and all pages shall be numbered.
- E. Shop Drawings. The Contractor shall submit one electronic copy. One will be returned with reviewer's comments and stamp. Shop drawings requirements are included in individual Specifications. The Contractor shall prepare shop drawings illustrating the portion of Work for use in fabricating, interfacing with other Work, and installing products. The Drawings shall not be reproduced and submitted as shop drawings. The Contractor shall include calculations relevant to the shop drawings as applicable.
- F. Product Data and Manufacturer's Instructions. The Contractor shall submit an electronic copy. The Contractor shall excise or cross-out non-applicable information and clearly mark applicable information with citations to and terminology consistent with Contract Documents.
- G. Samples. The Contractor shall submit one sample (unless otherwise directed) labeled with identification on each sample and reference to the applicable Contract Documents. Samples will not be returned unless return is requested in writing and an additional sample is submitted. Samples shall illustrate functional and aesthetic characteristics of products, with integral parts and attachment devices. The Contractor shall coordinate sample submittals for interfacing Work. Review of samples by the Construction Manager will be for limited purpose of checking for conformance with information given on the Drawings and in the Specifications.
- H. For submittals submitted for information or record only, the Contractor shall submit one electronic copy, and one will be returned.

#### 1.08 CONSTRUCTION MANAGER'S REVIEW

- A. The Construction Manager's review of submittals shall not release the Contractor from responsibility for performance of requirements of Contract Documents. Neither shall the Construction Manager's review release the Contractor from fulfilling purpose of installation nor from the Contractor's liability to replace defective Work.
- B. The Construction Manager's review will only involve checking for compliance with the design concept of the Project and for compliance with the information given on the Drawings and in the Specifications, not extending to means, methods, techniques, sequences, or procedures of construction (except where a specific means, method, technique, sequence, or procedure of construction is indicated in or required by the Drawings and Specifications), and not extending to standards, codes, or regulations, or to safety precautions or programs incident thereto. Approval of submittal by Construction Manager does not relieve the Contractor of responsibility for correcting errors that may exist in a submittal or from meeting the requirements of the Drawings and Specifications.
- C. The Construction Manager reserves the right to withhold action on a submittal that requires review of related submittals, before the submittal can be approved, until related submittals are received. Additional time will be required if processing must be delayed to permit review of related subsequent submittals.
- D. The Contractor shall not consider submittals as Contract Documents. The purpose of submittals is to demonstrate how the Contractor intends to conform to the design concepts.

- E. The Construction Manager's review of shop drawings, samples, or test procedures will be only for conformance with design concepts and for compliance with information given in Contract Documents. The Construction Manager's review does not extend to:
1. Accuracy of dimensions, quantities, or performance of equipment and systems designed by the Contractor.
  2. The Contractor's means, methods, techniques, sequences, or procedures, except when specified, indicated on the Drawings or required by Contract Documents.
  3. Safety precautions or programs related to safety, which shall remain the sole responsibility of the Contractor.
- F. Except as may be provided in the Specifications, a submittal will be returned within 10 business days. When a submittal cannot be returned within that period, the Construction Manager will, within a reasonable time after receipt of the submittal, give notice of the date by which that submittal will be returned.
- G. For submittal returned as **Approved**, the Contractor may proceed provided it complies with the requirements of the Drawings and Specifications. Final acceptance will depend on compliance. The term **Approved** shall only indicate there is no exception taken to the submittal.
- H. For submittals returned **Approved as noted**, the Contractor shall incorporate all review comments into the Work, but resubmittal of an amended submittal package is not required. Work covered by the submittal may proceed provided it complies with notations and corrections on submittal and requirements of the Drawings and Specifications. Final acceptance will depend upon that compliance.
- I. For submittals returned **Revise and resubmit**, the Contractor shall incorporate the review comments and required submittals into a complete revised package and resubmit it for review. The Contractor shall not proceed with Work covered by the submittal including purchasing, fabricating, and delivering.
- J. For submittals returned as **Rejected**, the content of the submittal does not meet the intent of the Drawings and Specifications. The Contractor shall resubmit the entire package to be compliant with the intent of the Contract Documents.
- K. For submittals returned **For information only**, no further action is required by the Contractor for this submittal.
- L. The Construction Manager will be entitled to rely on the accuracy or completeness of designs, calculations, or certifications made by licensed professionals accompanying each submittal, whether a stamp or seal is required by Contract Documents or relevant local, state, and federal laws and regulations.
- M. Submittals processed by the Construction Manager do not become Drawings and Specifications and are not considered Change Orders; the purpose of a submittal review is to establish a reporting procedure and is intended for the Contractor's convenience in organizing the Work and to permit the Construction Manager to monitor the Contractor's progress and understanding of the design. Review, acceptance, or approval of submittals shall not add to the Contract amount. Any additional costs that may result shall be solely the obligation of the Contractor.



1.09 MINOR OR INCIDENTAL PRODUCT AND EQUIPMENT SCHEDULES

- A. Shop drawings of minor or incidental fabricated products will not be required, unless requested.
- B. If requested by the Construction Manager, the Contractor shall submit tabulated lists of minor or incidental products showing the names of the manufacturers and catalog numbers, with product data and samples as required to determine acceptability.

1.10 SCHEDULING

- A. Submittals covering component items forming a system or items that are interrelated shall be scheduled to be coordinated and submitted concurrently. Certifications to be submitted with the pertinent shop drawings shall be so scheduled. Adequate time, a minimum of 10 calendar days, exclusive of mailing time, shall be allowed on the Submittal Register for review and approval. No delays, damages, or time extensions will be allowed for time lost in late submittals.

1.11 DEVIATIONS

- A. The Contractor shall set forth, in writing, the reason for any deviations and annotate such deviations on the submittal. The Construction Manager reserves the right to rescind inadvertent approval of submittals containing unnoted deviations.

**PART 2 – PRODUCTS (NOT USED)**

**PART 3 – EXECUTION**

3.01 SUBMITTAL REGISTER

- A. Attachment A provides a listing of submittals specifically referenced in the Specifications and Drawings. The list may not be all-inclusive and additional submittals will be required. The Contractor shall complete and submit the proposed Submittal Register to the Construction Manager in accordance with the timeframe specified in Attachment A.
- B. The Contractor's approved Submittal Register will become the scheduling document and will be used to control submittals throughout the life of the Contract. The Submittal Register and the Detailed Progress Schedules shall be coordinated.
- C. After initial approval of the Contractor's Submittal Register, the Contractor shall submit one copy of the revised and/or updated Submittal Register presenting the current status of each submittal as part of the monthly payment application to the Construction Manager.

3.02 SUBMITTALS KNOWN TO BE UNACCEPTABLE

The Contractor shall contact the Construction Manager regarding construction-testing submittals that have failed test criteria or are otherwise unacceptable.

**- END OF SECTION -**

**ATTACHMENT A**  
**DRAFT SUBMITTAL LIST/SCHEDULE**

<b>Submittal</b>	<b>Submittal Timeframe</b>
<b>Section 01 31 00 – Project Management and Coordination</b>	
List of Subcontractors	Prior to Pre-Construction Meeting
Contractor Signature Authority	Prior to Pre-Construction Meeting
Daily Activities Report	No later than 12 p.m. (local time) the following workday
Daily Construction Meeting Summary Form	Daily, with the Daily Activities Report
<b>Section 01 32 16 – Construction Progress Schedule</b>	
Preliminary Project Schedule	Prior to Pre-Construction Meeting
Detailed Progress Schedule	Within 30 days after Notice to Proceed
Updated Detailed Progress Schedule	Weekly (prior to each Weekly Progress Meeting)
3-Week Look-Ahead Schedule	Weekly (prior to each Weekly Progress Meeting)
Recovery Schedule	Within 7 days of failure to complete an activity by its scheduled completion date
Cash Flow Projection	Within 30 days after Notice to Proceed
Updated Cash Flow Projection	Monthly (prior to first Weekly Progress Meeting of the month)
Revised Schedule	Within 5 days of notification by the Construction Manager that submitted a schedule does not comply with Project requirements
<b>Section 01 33 00 – Submittal Procedures</b>	
Submittal Register	Within 14 days after Notice to Proceed
Updated Submittal Tracking Register	Weekly (prior to each Weekly Progress Meeting)
<b>Section 01 35 29 – Health, Safety, and Emergency Response Procedures</b>	
Qualifications and experience of the proposed Site Safety and Health Officer (SSHO) and the Contractor Responsible Person (CRP)	Within 14 days after Notice to Proceed and at least 30 days prior to any onsite Work.
Health and Safety Plan (HASP)	Within 60 days of Notice to Proceed and at least 30 days prior to any onsite Work Reviewed monthly by the SSHO and CRP Updated when appropriate Updated within 5 days of notification if requested by the Construction Manager
Subcontractor HASPs	To be included with Contractor's HASP
Vessel operator names, small commercial vessel operator license numbers, and issuance dates	Prior to the start of Work
Vessel Operator Qualifications	Prior to the start of Work
Copies of crane operator certificates and licenses, crane inspection reports, and rigging gear inspection reports	Prior to the start of Work
Personnel documentation, including medical monitoring, 40-hour HAZWOPER and other applicable training, and respirator qualification and fit testing	Prior to the start of Work
Critical Lift Plans	At least 1 day prior to the start of related Work
Daily Float Plans	Daily, vessels depart from their mooring or launch locations
Hot Work Permits	Per the Arconic Site Conditions
Digging/Excavation Permits	Per the Arconic Site Conditions

<b>Submittal</b>	<b>Submittal Timeframe</b>
Confined Space Entry Permits	Per the Arconic Site Conditions
Arconic Dive Operation Work Procedure/Permit, Task-specific Dive Plans, Diver Certifications	At least 1 day prior to the start of related Work
Documentation of visual inspections of cranes and rigging equipment	Daily, with the Daily Activities Report
Project Incident Investigation Report	Within 24 hours of learning about the incident
Daily logs, reports, minutes of safety meetings, and injury and incident reports	Daily, with the Daily Activities Report
Exposure and work zone monitoring results/reports	Daily, with the Daily Activities Report
<b>Section 01 35 43 – Environmental Protection</b>	
Environmental Protection Plan	Within 75 days after Notice to Proceed and at least 30 days prior to any onsite Work
Staging Area Stormwater Pollution Prevention Plan (SWPPP)	At least 30 days prior to related Work
SWPPP for other areas	At least 30 days prior to related Work
Erosion and Sedimentation Control Plan to address floodplain removal activities and other upland soil disturbance activities	At least 30 days prior to any related Work
Results and data for any air and water quality monitoring performed by the Contractor	Daily, with the Daily Activities Report
Release notification documentation	As soon as possible, but no later than 12 hours after incident
Spill and Discharge Cleanup Report	Within 12 hours after cleanup
Exceedance follow-up reports (water quality)	Within 24 hours for any exceedances
Exceedance follow-up reports (dust, polychlorinated biphenyl [PCB] emission, or noise monitoring)	Within 24 hours for any exceedances
Revegetation Plan	Proposed by the Contractor and approved by the Construction Manager when area affected is undeveloped with no maintained stand of vegetation
Documentation of inspection and maintenance of erosion and sedimentation controls as required by Site SWPPP	Daily, with the Daily Activities Report
Notification details pertaining to water quality, dust, PCB emission, or noise monitoring exceedance	Daily, with the Daily Activities Report
Documentation of noncompliance notification	Daily, with the Daily Activities Report
Copies of any required permits for aboveground petroleum storage	Prior to the start of related Work
<b>Section 01 35 53 – Security Procedures</b>	
Employee identification information	At least 2 workdays prior to each person conducting Work
Details for any proposed fencing, enclosures, barriers, gates, and signage	At least 14 days prior to the start of related Work
Daily log of worker and visitor entry and exit from Project Site	Daily, with the Daily Activities Report
<b>Section 01 40 00 – Contractor Quality Control</b>	
Contractor Quality Control Plan	Within 90 days after Notice to Proceed and at least 30 days prior to any onsite Work
Daily CQC Reports	Daily, with the Daily Activities Report
<b>Section 01 50 00 – Temporary Facilities and Controls</b>	
Drawings identifying proposed land to be used to support the Work	Within 60 days after Notice to Proceed and at least 30 days prior to any onsite Work

Submittal	Submittal Timeframe
Construction Facilities Layout Plan	Within 60 days after Notice to Proceed and at least 30 days prior to any onsite Work
River Access/Docking Plan	Within 60 days after Notice to Proceed and at least 30 days prior to any onsite Work
Barge Unloading and Loading Plan	Within 60 days after Notice to Proceed and at least 30 days prior to any onsite Work
Construction Lighting Plan	Within 90 days after Notice to Proceed and at least 30 days prior to any onsite Work
Traffic Control Plan	Within 90 days after Notice to Proceed and at least 30 days prior to any onsite Work
Excavation Plan	At least 60 days prior to the start of related Work and at least 30 days prior to any onsite Work
Installed Utility Drawings	Within 14 days after completion of installation
Notification of discrepancies in the utilities shown or referenced on the Drawings or in the Specifications and those observed in the field	Within 1 day upon discovery
<b>Section 01 66 10 – Material Delivery, Storage, and Handling</b>	
Material Storage and Handling Plan	Within 90 days after Notice to Proceed and at least 30 days prior to any onsite Work
Notification of problems associated with product shipments and description of proposed corrective action and schedule	Within 2 days upon discovery
<b>Section 01 71 13 – Mobilization and Demobilization</b>	
Mobilization Plan	At least 45 days prior to mobilization each construction season
Winterization Plan	At least 30 days prior to winterization each construction season
Sediment Processing Area Decommissioning Plan	At least 60 days prior to completion of dredging operations
Demobilization Plan	At least 60 days prior to demobilization each construction season
Restoration Plan	At least 60 days prior to restoration activities
Demobilization Documentation Report	Within 30 days following demobilization each construction season
Record Drawings detailing Staging Area restoration	Within 30 days after completion of Work
<b>Section 01 72 00 – Decontamination of Equipment</b>	
Equipment Decontamination Plan	Within 90 days after Notice to Proceed
Decontamination Status Report	Daily, with the Daily Activities Report
Equipment Decontamination Documentation Report	At least 3 days prior to the demobilization of any equipment that has contacted the dredged materials or handled contaminated waters
Identification of all materials and equipment planned for disposal as a result of decontamination activities	At least 30 days prior to planned disposal
<b>Section 01 78 00 – Project Closeout</b>	
Substantial Completion Evaluation Request	5 days prior to evaluation
Notice of Substantial Completion	When the Contractor considers the Work is substantially complete
Completion Certification	When the Contractor considers the Work is complete
Closeout Submittals	7 days after request from the Construction Manager
<b>Section 01 78 39 – Project Record Documents</b>	
Survey Record Drawings	Within 30 days of completion of Work
Post-Construction Record Drawings	At time of Substantial Completion

<b>Submittal</b>	<b>Submittal Timeframe</b>
Project Records	At time of Substantial Completion
Record Specifications and Addenda	At time of Substantial Completion
<b>Section 02 21 00 – Surveys</b>	
Survey Work Plan	Within 75 days after Notice to Proceed
Pre-Construction Conditions Surveys (support areas, structures, access roads, haul routes, monitoring wells, exposed utilities, and other relevant features)	Within 10 days of data collection and at least 7 days prior to the start of mobilization each construction season
Debris Survey (locations, types, and sizes of debris and other obstructions)	Before commencement of the Work
Pre-Construction River Survey	Within 7 days of survey completion
Pre-Dredge Surveys, Pre-Excavation Surveys, and Pre-Placement Cap Surveys	Within 10 days of survey completion
New York State Professional Land Surveyor letter certifying Work location	Within 10 days of data collection
Utility Surveys	Before commencement of the Work
Post-Construction Utilities Survey	Within 10 days of completion of survey
Progress Surveys	Daily, as applicable
Verification Surveys (Post-Dredge Surveys, Post-Backfill Placement Surveys, Post-Excavation Surveys, and Post-Placement Cap Surveys)	Within 2 days of survey completion
Daily visual presentation of dredging, backfilling, and cap layer placement progress	Daily, as applicable
Documentation of accuracy of survey work, survey logs, and survey field notes	Daily, with the Daily Activities Report
Survey Record Drawings	Within 14 days of survey completion
Post-Construction Conditions Survey (support areas, structures, access roads, haul routes, monitoring wells, exposed utilities, and other relevant features)	Within 14 days of final demobilization each construction season
Survey logs and field notes	Within 14 days of final demobilization each construction season
<b>Section 02 72 00 – Water Pretreatment</b>	
Water Pretreatment Plan	Within 75 days after Notice to Proceed and at least 60 days prior to any related Work
Water Quality Testing Records	Within 1 day of receipt of the results
<b>Section 02 81 02 – Transportation and Disposal of Waste Material</b>	
Transportation and Disposal Plan	Within 75 days after Notice to Proceed and at least 60 days prior to related Work
Bill of Lading for each truck load from Staging Area to landfill	Daily, as applicable
Daily transportation reports/logs	Daily, with the Daily Activities Report
<b>Section 05 12 00 – Steel</b>	
Work Plan that includes design for water system	At least 60 days prior to the start of related Work
Certification that materials meet ASTM requirements	At least 60 days prior to the start of related Work
Contractor qualifications	At least 60 days prior to the start of related Work
Welder qualifications and weld procedures	At least 60 days prior to the start of related Work
<b>Section 31 13 13 – Selective Shoreline Vegetation Removal</b>	

<b>Submittal</b>	<b>Submittal Timeframe</b>
Shoreline Vegetation Trimming and Removal Plan	At least 45 days prior to the start of related Work
Tree Removal Plan	At least 45 days prior to the start of related Work
<b>Section 31 23 00 – Earthwork</b>	
Cut and Fill Plan	14 days prior to commencing cut and fill operations
Proposed methods and sequence of construction	At least 30 days prior to the start of related Work
Compaction and laboratory test results of backfill	Within 1 day of receipt of the results
Complete product data for materials	At least 30 days prior to the start of related Work
Laboratory test results for all fill materials	Within 1 day of receipt of the results
<b>Section 31 23 23 – Capping and Backfilling</b>	
Backfilling and Capping Plan	Within 75 days after Notice to Proceed (first construction season) At least 60 days prior to the start of backfilling or capping each construction season (remaining construction seasons)
Updates to Backfilling and Capping Plan	As requested by the Construction Manager
Material specifications for proposed granular activated carbon	With the Backfilling and Capping Plan
Borrow source characterization report	At least 30 days prior to importing borrow materials
Daily Backfilling and Capping Reports	Daily, with the Daily Activities Report
Material testing results	Within 5 days of receipt of the results
Cap thickness physical measurement documentation (i.e., core sampling and catch pan)	Within 2 days after material placement
Quality control cap placement documentation (e.g., material volume tracking, additional physical sample results).	Within 2 days after material placement
Habitat layer material placement documentation	Within 2 days after material placement
Material placement volumetric placement documentation for Twelve-inch Chemical Isolation Layer Areas	Within 2 days after material placement
Cap pilot test demonstration records	Within 1 week after material placement
Staged Construction Cap Pilot Test Work Plan	At least 30 days prior to the start of related work
<b>Section 32 92 19 – Loaming and Seeding</b>	
Complete shop drawings, materials, and equipment furnished	At least 30 days prior to the start of related Work
Samples of materials	At least 30 days prior to the start of related Work
<b>Section 32 92 21 – Shoreline Seeding</b>	
Seeding Plan	At least 30 days prior to the start of related Work
<b>Section 35 02 00 – Marine Equipment and Marine Traffic Control</b>	
Vessel List	At least 30 days prior to mobilization each construction season
Marine Equipment Safety Inspection Report	At least 30 days prior to mobilization to the Project Site
Anchoring Plan	Within 90 days after Notice to Proceed and at least 30 days prior to any onsite Work
Weekly Marine Safety Report	Weekly
Communications and Radio Installation Plan	At least 30 days prior to mobilization
Marine Traffic Coordination Plan	Within 90 days after Notice to Proceed and at least 30 days prior to any onsite Work

<b>Submittal</b>	<b>Submittal Timeframe</b>
Local Notice to Mariners	Weekly, as necessary
<b>Section 35 30 23 – Dredging</b>	
Dredging Plan	Within 75 days after Notice to Proceed (first construction season) At least 60 days prior to the start of dredging each construction season (remaining construction seasons)
Proposed Setbacks	With the Dredging Plan each construction season
Dock and Private Structure Plan	At least 60 days prior to dredging each construction season
Notice of Intent to Dredge	Prior to the commencement of Work on the Contract, and submitted with sufficient time so it appears in the Notice to Mariners at least 2 weeks prior to the commencement of dredging
Daily Dredge Reports	Daily, with the Daily Activities Report
Utility Notification	At least 7 days before Work within 300 feet of a utility or as requested by the utility owner.
Progress and Final Surveys	Per Section 02 21 00 – Surveys
<b>Section 35 44 00 – Waterway Habitat Features</b>	
Waterway Habitat Features Work Plan	At least 90 days prior to the start of related Work
<b>Section 35 55 29 – Dredge Material Processing and Handling</b>	
Dredged Material Management and Processing Plan	Within 75 days after Notice to Proceed and at least 30 days prior to any onsite Work
Daily Site Operations Report Data	Daily, with the Daily Activities Report
Dredged Material Test Results	Prior to transport of dredged material to the Secure Landfill
<b>Section 35 80 00 – Marine Resuspension Controls</b>	
Marine Resuspension Control Plan	Within 75 days after Notice to Proceed
Design of Resuspension Control System(s)	Within 75 days after Notice to Proceed
Daily Marine Resuspension Control System Inspection Reporting	Daily, with the Daily Activities Report

**SECTION 01 35 29**

**HEALTH, SAFETY, AND EMERGENCY RESPONSE PROCEDURES**

**PART 1 – GENERAL**

**1.01 REFERENCED SECTIONS**

- A. Section 00 31 00 – Available Project Information
- B. Section 01 31 00 – Project Management and Coordination
- C. Section 01 33 00 – Submittal Procedures
- D. Section 01 72 00 – Decontamination of Equipment

**1.02 REFERENCES**

- A. Work performed shall comply with the following documents, guidelines, and references and all applicable regulations and standards, including those listed below. It is the sole responsibility of the Contractor to identify and comply with all safety and health standards, regulations, and guidance applicable to the Work. In cases where these requirements conflict, the one that offers the greatest level of protection shall be followed, unless there is a specific written agreement between the Company and the Contractor to the contrary.
  - 1. Arconic Massena Operations Site Conditions and Attachments (Arconic Site Conditions)
  - 2. Occupational Safety and Health Administration (OSHA) Regulations
    - a. 29 Code of Federal Regulations (CFR) 1910 (Occupational Safety and Health Standards), with specific attention to Part 1910.120 for activities involving handling of or exposure to polychlorinated biphenyl (PCB)-impacted sediments
    - b. 29 CFR 1915 (Occupational Safety and Health Standards for Shipyard Employment)
    - c. 29 CFR 1917 (Marine Terminals)
    - d. 29 CFR 1918 (Safety and Health Regulations for Longshoring)
    - e. 29 CFR 1926 (Safety and Health regulations for Construction), with specific attention to Part 1926.65 (Hazardous Waste Operations and Emergency Response) for activities involving handling of or exposure to with PCB-impacted sediments
  - 3. National Institute for Occupational Safety and Health (NIOSH) Publication No. 85-115: Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities
  - 4. U.S. Environmental Protection Agency (EPA) Publication No. 9285.1-03: Standard Operating Safety Guides
  - 5. American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values for Chemical Substances and Physical Agents & Biological Exposure Indices
  - 6. U.S. Coast Guard (USCG)



- a. Navigation Rules (International – Inland) – COMDTINST M16672.2D
- b. 33 CFR – Navigation and Navigable Waters
- 7. Department of Transportation (USDOT) Regulations
  - a. 49 CFR 101, 106 and 107 (Procedures and Policies)
  - b. 49 CFR 172 (Material Designations)
  - c. 49 CFR 173, 178, 179 and 180 (Packaging)
  - d. 49 CFR 171, 173, 174, 175, 176 and 177 (Operational Rules)
  - e. 49 CFR Parts 300 to 399, Chapter III – Federal Motor Carrier Safety Administration, and specifically as they apply to Commercial Driver's License and driver qualification
  - f. Pipeline and Hazardous Materials Safety Administration rules, specifically as they apply to hazardous material training requirements and shipping papers
- 8. U.S. Army Corps of Engineers (USACE) Safety Manual, EM-385-1-1 (2014)
- 9. American National Standards Institute (ANSI) C2, National Electrical Safety Code
- 10. National Fire Protection Association (NFPA) 70, National Electrical Code
- 11. Arconic Dive Safety Standard for Commercial Air Diving Operations

1.03 DESCRIPTION

- A. The Contractor shall provide all labor, materials, equipment, and services necessary for the Contractor to protect public welfare, the environment, and the health and safety of Project Site personnel, visitors, trespassers, and nearby public persons during the performance of all Work.
- B. All Work shall comply with the requirements of the Arconic Site Conditions. The Arconic Site Conditions is a mandatory document that contains expectations and requirements applicable to all Contractors, subcontractors, contracted services, and vendors. The Arconic Site Conditions document describes the Environment, Health, and Safety (EHS) responsibilities and is a binding and integral part of the Contract.
- C. The Contractor shall develop and implement a Health and Safety Plan (HASP) that addresses the health and safety of all Contractor and subcontractor personnel (as applicable) involved with the Work. The Contractor's HASP shall be submitted to the Construction Manager for review prior to the start of the Work as described in this Specification. If any subcontractor elects to prepare their own Project Site-specific HASP, the subcontractor HASP shall comply with the requirements of this Specification. The Contractor shall review all such subcontractor HASPs to ensure the requirements of this Specification are met, and the Contractor shall submit all subcontractor HASPs to the Construction Manager for review prior to the start of the Work by the subcontractor.
- D. The Construction Manager and Arconic Responsible Person (ARP) will observe the Contractor's health and safety program throughout the duration of the Project to verify compliance with this Specification, the Arconic Site Conditions, and the Contractor's HASP.

Submittals required under this Specification will be subject to review by the Construction Manager and the ARP. The Construction Manager may also serve as the ARP for this Project.

- E. The requirements of this Specification shall in no way relieve the Contractor from the responsibility to implement stricter health and safety precautions as warranted by the Work or field conditions.

#### 1.04 SUBMITTALS

Prior to submittal, all submittals required by this Specification shall be approved by the Contractor's Site Safety and Health Officer (SSHO) and the Contractor Responsible Person (CRP). The Contractor shall submit the following in accordance with Section 01 33 00 – Submittal Procedures.

##### A. Pre-Construction

1. Qualifications and experience of the proposed SSHOs and CRP.
2. HASP, including any subcontractor HASPs as applicable. The HASP shall address all applicable requirements under OSHA 29 CFR 1910.120 and 29 CFR 1926.65, this Specification, and the Arconic Site Conditions. The HASP shall be prepared by Contractor's SSHO and CRP. The HASP shall be written to avoid misinterpretation, ambiguity, and mistakes that verbal orders cause. The HASP shall establish, in detail, the protocols necessary for the recognition, evaluation, and control of all hazards associated with each task performed by the Contractor and subcontractors. The HASP shall address safety and health requirements and procedures based on Project Site-specific conditions. The HASP shall address worker hazard control procedures for all contaminated soil, sediment, debris, and water to be encountered. The HASP must be approved by the Construction Manager prior to commencement of Project activities. The HASP shall be reviewed at least monthly by the SSHO and CRP, be updated when appropriate, and be updated within 5 days if requested by the Construction Manager from the date of notification. The HASP requirements shall be communicated to all affected Contractor and subcontractor personnel, and all personnel shall be fully informed of any modifications to the HASP and required actions. At a minimum, the HASP shall include the following items:
  - a. All requirements identified in 29 CFR 1910.120(b)(4) and 29 CFR 1926.65(b)(4).
  - b. Specific provisions for Stop Work authority.
  - c. Specific provisions for re-evaluating safety procedures and equipment, in the event an unanticipated Work scope is required or unanticipated conditions arise.
  - d. Identification of and contact information for the Contractor's SSHO, CRP, and other key personnel responsible for Project Site safety (including alternates) including an organization chart.
  - e. A description of how safety will be controlled regarding non-Contractor personnel (e.g., construction observers, regulatory personnel, visitors, and public).
  - f. An Emergency Response Plan in accordance with 29 CFR 1910.120(l). The Emergency Response Plan shall also include a Man Overboard Plan and an Abandon Ship Plan that describe emergency response procedures for these situations (e.g., procedures, personnel responsibilities, training, and frequency and scope of drills).

- g. A written Hazard Communication Program that complies with the OSHA Hazardous Communications Standard (29 CFR 1910.1200) and the Arconic Site Conditions, including the Arconic EHS Standard 33.052.4 (Application of the OSHA Hazard Communication Standard for Outside Contractors), including a Chemical Inventory listing and Safety Data Sheets (SDSs) for all chemicals and products to be used at the Project Site.
- h. Lockout/Tagout Procedures that comply with 29 CFR 1910.147 and meet or exceed Arconic's Lockout/Tagout Program described in the Arconic Site Conditions.
- i. Fall Protection Procedures that comply with 29 CFR 1926 Subpart M and meet or exceed Arconic's Fall Control Program described in the Arconic Site Conditions. The Contractor's procedures shall address fall hazards during different phases of construction and operations, including descriptions of the fall protection and prevention systems, equipment and methods employed for each phase of Work, responsibilities, training requirements, and monitoring methods.
- j. Crane operations procedures for preparation, inspection, use, and maintenance in accordance with the Arconic Site Conditions, OSHA regulations, and industry standards.
- k. A Fatigue Risk Management Plan that addresses extended work shifts, unusual work hours, and other factors that contribute to fatigue.
- l. A Hot/Cold Weather Operations Plan that addresses Work in hot/cold weather conditions, including potential hazards due to hot and cold conditions, procedures to prevent cold stress to personnel, monitoring of personnel, and measures to prevent hot and cold stress to personnel.
- m. The Contractor's procedures for stopping work during thunderstorms and when lightning is present in accordance with the Arconic Site Conditions.
- n. A Safe Practices Manual for Commercial Diving in accordance with 29 CFR 1910.420, as applicable, as well as a General Topside Safety Manual and a Dive Operations and Safety Plan in accordance with Arconic Dive Safety Standard for Commercial Air Diving Operations.
- o. Personnel hygiene and decontamination.
- p. A task-specific job safety analysis (JSA) for each component of Work, including, but not limited to:
  - 1) Mobilization
  - 2) Project Site preparation
  - 3) Utility connections
  - 4) General maintenance, field activities, and housekeeping
  - 5) Fueling
  - 6) Unloading of equipment and materials

- 7) Traffic control
  - 8) Vessel operations
  - 9) General crane operations
  - 10) Diving operations (if any)
  - 11) Heavy equipment operation
  - 12) Decontamination
  - 13) Surveying
  - 14) Shoreline vegetation and tree removal
  - 15) Dredging operations
  - 16) Backfilling/capping operations
  - 17) Backfill/cap material staging and handling
  - 18) Dredged material handling/dewatering
  - 19) Material scow/barge loading, unloading, and transport
  - 20) Habitat construction, including placement of waterway habitat features
  - 21) Truck loading and transport of dredged material
  - 22) Tank cleanout (confined space)
  - 23) Offseason operations
  - 24) Demobilization
- q. Logs, reports, and recordkeeping.
- r. Procedures for investigating and reporting safety incidents (e.g., injuries, Stop Work directives, near misses, and vehicle accidents) occurring during the performance of the Work. The Contractor shall include a description of the process for completing incident investigations root cause analyses (i.e., identification of contributing factors relating to the incident). The Contractor shall identify who will be responsible for performing incident investigations, root cause analyses, and reporting.
- s. HASP approvals by appropriate and qualified Contractor personnel.
3. Vessel operator names, small commercial vessel operator license numbers, and issuance dates.
4. Copies of crane operator certificates and licenses, crane inspection reports, and rigging gear inspection reports.
5. Personnel documentation, including:

- a. Documentation of medical monitoring for all onsite personnel.
- b. Documentation of 40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) training and applicable 8-hour annual HAZWOPER refresher training and other applicable training (e.g., confined space entry).
- c. Documentation of personnel respirator qualification and fit testing.

B. During Construction

- 1. Critical Lift Plans for each proposed critical lift.
- 2. Daily Float Plans in accordance with Part 3.04.KK of this Specification.
- 3. Hot Work Permits per the Arconic Site Conditions.
- 4. Digging/Excavation Permits per the Arconic Site Conditions.
- 5. Confined Space Entry Permits per the Arconic Site Conditions.
- 6. A task-specific Dive Permit in accordance with Arconic Dive Safety Standard for Commercial Air Diving Operations for each diving operation and provide additional information specific to the dive operation in question, including diver certifications, training, and confirmation of current substance screening for all dive personnel.
- 7. Documentation of visual inspections of cranes and rigging equipment in accordance with Part 3.11.E of this Specification.
- 8. Incident, near miss, and incident investigation reporting in accordance with Part 3.13 of this Specification.
- 9. Daily logs, reports, minutes of safety meetings, and injury and incident reports in accordance with Part 3.14 of this Specification.
- 10. Exposure and work zone monitoring results/reports conducted by the Contractor (e.g., air monitoring, heat stress/cold stress monitoring) in accordance with Part 3.10.I.
- 11. Copies of health and safety forms, logs, and OSHA records.

1.05 STAFF ORGANIZATION, QUALIFICATIONS, AND AUTHORITY

- A. The Contractor shall develop a staff organizational structure that sets forth lines of authority, responsibility, and communication related to health and safety.
- B. The Contractor shall designate, subject to Construction Manager approval, at least one SSHO who will be the lead safety person for their Work.
  - 1. The SSHO shall have a minimum of 10 years of safety experience of a progressive nature with at least 5 years of experience on similar projects and specific experience on marine construction projects.
  - 2. The SSHO shall possess at least one of the following certifications: Certified Safety Professional, Certified Industrial Hygienist, or Construction Health and Safety Technician.

3. The SSHO shall be responsible for developing, implementing, administering, and supervising the Contractor's HASP and associated procedures in accordance with the Specifications. The SSHO shall review the available chemical and analytical data referenced in Section 00 31 00 – Available Project Information, the specified scope of Work, and Project Site conditions to determine the appropriate safety procedures and equipment in the development of the HASP.
- C. The Contractor shall designate, subject to Construction Manager approval, at least one CRP in accordance with the Arconic Site Conditions. Roles and responsibilities for the CRP are described in the Arconic Site Conditions. The Contractor's SSHO may serve as the CRP subject to approval by the Construction Manager. Each CRP will be required to attend CRP training provided by Arconic prior to the start of Work.
- D. The Contractor may designate one or more safety representatives to assist the SSHO and CRP with implementing, administering, and supervising the Contractor's HASP and associated safety procedures in accordance with the Specifications. All designated safety representatives shall have a minimum of 5 years of safety experience with at least 2 years of experience on similar projects, with specific experience with marine construction projects. Each designated safety representative shall demonstrate competence through documented safety training and experience in marine construction, hazardous waste operations, and materials handling. The qualifications and prior relevant project experience of the Contractor's proposed safety representatives shall be submitted to the Construction Manager for acceptance prior to their engagement on the Project.
- E. At least one SSHO, CRP, or their designated safety representative shall be at the Project Site for each shift when active Work is being performed.
- F. The Contractor shall provide at least two individuals current in CPR/first aid training for each work area on the Project Site during every shift.
- G. The Contractor shall identify and certify competent persons as defined by OSHA for Work or tasks requiring that level of qualification or supervision. The competent person personnel shall be present on the Project Site when such Work is taking place.
- H. Crane operators shall be certified in accordance with OSHA requirements and comply with Arconic Site Conditions.
- I. The SSHO and CRP shall review with the Company, at the Company's request, Project safety statistics, audit results, and compliance with Project safety metrics.
- J. The SSHOs shall maintain a continuous health and safety monitoring program throughout the performance of the Work. Contractor's SSHO responsibilities shall include, but not be limited to, attendance of all weekly construction meetings; administration and documentation of daily tailgate meetings; oversight of Project Site health and safety; protection of public health and safety as it relates to the Work; exposure and work zone monitoring; personnel and equipment decontamination; control of safety equipment checkout; Project Site traffic control; and emergency response. It shall be the SSHO's responsibility to notify the Construction Manager of any deviations from the health and safety monitoring program.
- K. If the Construction Manager finds the Contractor's SSHO is not providing adequate health and safety management, the Contractor may be required to provide alternate personnel subject to approval by the Company to serve as SSHO.

## PART 2 – PRODUCTS

### 2.01 PERSONAL PROTECTIVE EQUIPMENT

- A. The Contractor is responsible for determining, providing, and maintaining appropriate levels of personal protective equipment (PPE) for personnel for each Work task. PPE shall be selected, used, and maintained consistent with the Arconic Site Conditions and 29 CFR 1910.120, at a minimum. The Contractor shall define in its HASP task-specific PPE requirements for all personnel and Work tasks. Components of levels of PPE (i.e., Levels B, C, D, and modified D) shall be relevant to Project Site-specific conditions, including heat stress and potential safety hazards. Levels of protection for each Work task shall be based on historical information, air monitoring results, and an evaluation of the potential for exposure during each task. Any change or adjustment to the levels of PPE shall be immediately brought to the attention of the Construction Manager.
- B. The Contractor shall provide and maintain all necessary health and safety equipment, including, but not limited to, PPE, respiratory equipment (if applicable), and monitoring instruments.
- C. The minimum initial level of protection for onsite personnel performing any Work is Level D PPE to include a Arconic-approved lime-green hard hat, steel-toed boots, lime-green high-visibility reflective vest, long-sleeved shirts, and safety glasses. Additional PPE shall include disposable coveralls, disposable booties, face shields, hearing protection, appropriate gloves, respiratory protection, fall arrest equipment, arc flash protection, cold-weather gear, and hot-weather gear as required based on field conditions and the activities being performed.
- D. Hard hats shall include a strip of reflective tape along the lower sides and back of the hat. Hard hats shall also bear the person's first and last name and company affiliation.
- E. Contractor personnel working in the conditions described in Part 3.04.K shall wear a USCG-approved Commercial Type I, II, or III personal flotation device (PFD), appropriate to the circumstance. Other types of USCG-approved PFDs must be approved by the Construction Manager prior to their use. PFDs shall be equipped with an attached emergency whistle and a light that is activated when submerged in water. PFDs shall be capable of rolling over an unconscious person to ensure they will float face up. Prior to and after each use, the PFD shall be inspected for defects that would alter their strength and buoyancy. Defective units shall be removed from service.
- F. All health and safety materials and equipment shall conform, at a minimum, to the requirements of this Specification, the Arconic Site Conditions, and appropriate NIOSH, ANSI, and ASTM International standards and requirements.
- G. Levels of protection may be upgraded, downgraded, or modified during Project Site activities based on air monitoring results, the judgment of the SSHO, and concurrence by the Construction Manager. There will be no downgrades beyond minimum level of PPE specified. The Contractor shall notify the Construction Manager prior to deploying Levels A, B, or C protection.
- H. If air-purifying cartridge respirators are utilized, a cartridge change-out schedule in compliance with 29 CFR 1910.134 shall be provided in the Contractor HASP that demonstrates breakthrough or overexposure will not occur.
- I. Proper PPE shall be worn for welding, burning, or other hot work per Arconic Site Conditions. Welding screens shall be used when welding operations can impact other employees or the public. Protective clothing that provides thermal protection shall be worn.

- J. High-visibility reflective safety vests or other suitable garments shall be worn by all personnel that are potentially exposed to vehicular or equipment hazards. Lighted reflective LED illuminated safety vests shall be required for all personnel working near roadways, railways, or moving vehicles, including heavy operating equipment, if working before dawn, after dusk, or during reduced visibility (e.g., fog).
- K. Work shall be suspended whenever Contractor or subcontractor personnel are not equipped with a sufficient level of protective clothing or equipment for the hazards encountered.

## 2.02 EMERGENCY EQUIPMENT

- A. The following emergency and first aid equipment items, at a minimum, shall be maintained and available in sufficient quantities and locations throughout the Project Site to immediately address incidents that may arise for the period of the Work:
  - 1. First aid equipment and supplies, including first aid kits minimally stocked in accordance with OSHA requirements (Standard 1910.266 App A), oxygen kit, automated external defibrillator (AED), eyewash, safety shower, and blankets.
  - 2. Fire extinguishers, with a minimum rating of 2A:10B:C, per Arconic Site Conditions, NFPA standards, and OSHA standards.
  - 3. Emergency rescue equipment shall be defined in the Contractor's HASP (e.g., self-contained breathing apparatus; tripod/extraction equipment; backboard/basket for transport of injured personnel; air horns/bull horns for emergency signaling and communications; and washing supplies for personnel decontamination).
- B. All Contractor safety personnel, project managers, and key supervisors shall be equipped with emergency communication devices.
- C. All boats and vessels used on the Project shall comply with USCG regulations and carry all USCG-required safety equipment, including adequate signaling and communication devices. Spare PFDs and water rescue devices for emergency use shall be located on all Project boats and vessels.

## PART 3 – EXECUTION

### 3.01 IMPLEMENTATION OF THE HASP

- A. It shall be the sole responsibility of the Contractor to ensure all health and safety requirements are implemented in accordance with this Specification, the Contractor's HASP, subcontractor's HASP(s), Arconic's Site Conditions, and applicable federal, state, and local health and safety statutes and codes.
- B. The Construction Manager, ARP, or designee will require the Contractor to conduct, or it may conduct itself, safety audits, and inspections to verify Work is being performed in accordance with the Contractor's HASP and the Arconic Site Conditions. The Contractor will be notified regarding items needing improvement and will be required to provide written corrective actions if these requirements are not met or appear inadequate.
- C. The HASP shall be kept in worker-accessible locations at the Project Site for the duration of the Project.



### 3.02 STOP WORK AUTHORITY

- A. All Project Site personnel shall have the right, the responsibility, and the authority to issue a Stop Work directive at any time as necessary to protect the safety or health of themselves, others, the public, or the environment.
- B. Personnel shall not face any repercussions for issuing a Stop Work directive.
- C. If a Stop Work directive is issued, the Contractor must immediately take prudent corrective action to secure the Work and provide safe conditions for Project Site personnel, the public, and the environment. This corrective action shall be followed by a written incident report to the Construction Manager in accordance with Part 3.13.

### 3.03 PROJECT SITE ACCESS AND CONTROL

- A. The Contractor shall clearly delineate, mark, and identify the work zones in the field as described in the Contractor's HASP and consistent with 29 CFR 1910.120.
  - 1. Exclusion Zone. The Exclusion Zone shall include and encompass all areas designated for PCB-containing materials excavation, dredging, stockpiling, and handling. The level of PPE required in the Exclusion Zone shall be as determined by the SSHO and as identified in the Contractor's HASP. The Contractor shall control entry into the Exclusion Zone, and exit may only be made through the Contaminant Reduction Zone.
  - 2. Contaminant Reduction Zone. The Contaminant Reduction Zone shall be clearly delineated and located outside of and adjacent to the exclusion zone. The Contaminant Reduction Zone shall be where PPE is donned/doffed and decontamination activities occur; PPE and contaminated liquids or solids shall be containerized for disposal in accordance with the Specifications.
  - 3. Support Zone. The Support Zone shall be established onsite and is defined as the area outside the Contaminant Reduction Zone and Exclusion Zone. The Support Zone shall be secured against active or passive contamination from the Contaminant Reduction Zone. No equipment or personnel may go from the Exclusion Zone to the Support Zone without passing through the Contaminant Reduction Zone and being decontaminated in accordance with the Contractor's HASP.
- B. The Contractor shall adjust Work Zones as necessary to support the specific Work being performed.
- C. No eating or drinking is allowed within the Exclusion Zone or the Contaminant Reduction Zone.
- D. The Contractor is responsible for securing the work areas at the end of each shift and ensuring all work areas are fenced, barricaded, marked, or secured in such a way to prevent unauthorized or accidental access or tampering with equipment or materials that may result in bodily injury or a release of hazardous materials.

### 3.04 WORK REQUIREMENTS

- A. The Contractor shall implement a safe work policy on the Project and establish a goal of minimizing or eliminating hazards to personnel, process, equipment, environment, and the general public.
- B. The Contractor shall participate in a Project Environment, Health, and Safety Review (PEHSR) with the Company and Construction Manager to ensure sound environmental, health, and

safety practices are incorporated into the Project in accordance with Arconic's standards. The Contractor shall be required to participate in the PEHSR process during the design and construction review phases of the Project. The PEHSR will be initiated by the Company or Construction Manager prior to construction as described in the Arconic Site Conditions.

- C. Work performed by each individual person shall not exceed 64 hours per week. In addition, Personnel shall not work more than 12 hours in any day or shift. Specific exceptions may be granted on a case-by-case basis. If the Contractor proposes a specific exception to the individual work hour limits, the Contractor shall submit a written request to the Construction Manager and Company that: describes in detail why such exception is necessary; clearly defines which activities and the time period for such exception; and provides a thorough fatigue management program to be implemented if such exception is granted. Any exception to individual work hour limits will require written approval by the Company.
- D. In the event the Contractor discovers unknown, unforeseen, sudden, or potentially hazardous conditions, or environmental conditions substantially inconsistent with known existing conditions, the Contractor shall notify the Construction Manager immediately. In addition, the Contractor shall provide verbal notification of any environmental releases, injuries, near misses, or environmental occurrences to the Construction Manager immediately following the incident. The Contractor shall take prudent action to establish and maintain safe working conditions and to safeguard workers, onsite personnel, trespassers, and the environment in accordance with the established emergency response procedures detailed in the Contractor's HASP.
- E. Prior to commencement of any Project Site activities and as new workers are assigned to the Project Site, the Contractor's SSHO and CRP shall review the HASP with, and provide appropriate training on required PPE use, to all onsite employees. New employees working on the Project Site and visitors shall be informed of the Project Site conditions and safety requirements by the Contractor's SSHO or CRP. Documentation of these reviews and notifications, as well as sign in-sheets shall be maintained by the Contractor and accessible to the Construction Manager or ARP.
- F. The Contractor's SSHO or CRP shall be responsible for signing visitors onto the Project Site and providing them with information regarding the day's activities and related safety issues. The Contractor shall maintain a daily visitor's log, recording, at a minimum, the name and affiliation of each visitor and documentation of the safety orientation. If visitors enter the Exclusion Zone, the same PPE and training requirements being met by the Contractor's personnel shall be required of the visitors.
- G. The Contractor's SSHO or CRP shall perform daily inspections of the active work areas covering workplace conditions, physical facility safety, and employee work practices. Any deficiencies and corresponding corrective actions shall be documented in the Daily Activities Report. The daily inspections shall be documented, kept onsite, accessible to the Construction Manager or ARP, and are subject to audit by the Construction Manager or ARP.
- H. All Work shall be performed using the buddy system. If an individual does not have a direct line of sight with another individual, then the individual shall have a means of communicating with an individual in the workgroup (e.g., a two-way radio or other communication tool).
- I. The Contractor shall develop and utilize JSAs that address each element of Work to be undertaken by the Contractor. JSAs shall be presented and reviewed by each crew prior to the start of Work. JSAs shall be revised or updated as new tasks are added and as the need for improvement is noted and as conditions change. JSAs are living documents and are meant to be modified in the field as needed.

- J. In any emergency threatening life or property, the Contractor may act at its own discretion without authorization by the Construction Manager. In the case of such an event, the Contractor shall notify the Construction Manager as soon as practicable.
- K. Personnel walking or working within 10 feet of the water's edge, on a barge/dredge, on a marine vessel/boat, or near water where the danger of drowning exists shall wear USCG-approved PFDs.
- L. Fall protection shall also be provided if there is a reasonable possibility that persons could fall 4 or more feet to land, water, a lower level, deck, tethered vessel, or dock/pier. Fall protection (including on barges or other marine equipment) shall comply with the fall protection requirements presented in the Arconic Site Conditions and all federal, state, or local regulations regarding fall protection that may apply.
- M. The Contractor's use of cranes and other mobile equipment shall comply with all inspection, training, operation, and maintenance requirements of the Arconic Site Conditions, including the Arconic Mobile Equipment Program.
- N. Prior to diving operations, the Contractor shall obtain a task-specific Dive Permit in accordance with Arconic Dive Safety Standard for Commercial Air Diving Operations.
- O. Hot work shall comply with the Arconic Site Conditions.
- P. Digging and excavation activities at the Staging Area shall comply with Arconic's Digging Drilling Excavation Procedure presented in the Arconic Site Conditions.
- Q. Confined space entry shall comply with 29 CFR 1910.146, 29 CFR Subpart AA, and Arconic's Confined Space Program presented in the Arconic Site Conditions.
- R. The Contractor's Lockout/Tagout procedures shall comply with 29 CFR 1910.147 and Arconic's Lockout/Tagout Program presented in the Arconic Site Conditions.
- S. The Contractor's use of respirators shall with 29 CFR 1910.134 and Arconic's Respiratory Protection Program presented in the Arconic Site Conditions.
- T. Hoisting of personnel on a personnel platform by a crane or derrick is prohibited, except when the operation meets the requirements of 29 CFR 1926.1431.
- U. The use of gasoline- or propane-powered equipment inside a building is strictly prohibited, unless authorized in advance by the Construction Manager.
- V. The Contractor shall comply with electric safety requirements per the Arconic Site Conditions (including the Massena Electrical Safety Standard and the High Voltage Electrical Safety Standard, provided as part of the Arconic Site Conditions), National Electrical Safety Code (ANSI C2), and the National Electrical Code (NFPA 70). All temporary electrical power must have a ground-fault circuit interrupter as part of its circuit. All equipment must be suitable and approved for the class of hazard present.
- W. Contractor and subcontractor personnel who perform electrical work shall be trained in accordance with the Massena Electrical Safety Standard provided as part of the Arconic Site Conditions.
- X. Fuel storage, fueling, and gas cylinder storage shall follow the requirements of the Arconic Site Conditions and applicable federal, state, and local regulations.

- Y. A motor vehicle engine shall not be left running if the vehicle/equipment is unattended, unless it is necessary in the normal operational requirement of the unit.
- Z. Riding in the back of pick-up trucks is prohibited.
- AA. Project support vehicles shall be equipped with maps to nearest pre-notified medical facility. At the beginning of Project operations, drivers of support vehicles shall become familiar with the emergency route and the travel time required.
- BB. The driver of any motor vehicle on the Project Site is responsible for its safe condition and use. The vehicle owner shall promptly correct any malfunction of brakes, lights, horn, leaks, exhaust system, or any other defect that affects physical or environmental safety. The driver is required to have a valid driver's license, and the vehicle shall have a valid license plate and registration if operated on public roadways. All traffic rules shall be obeyed, and pedestrians have the right of way at the Project Site. Any leaks or spills associated with company or personal vehicles that occur onsite must be reported to the Construction Manager.
- CC. Mobile equipment shall be equipped with backup alarms in accordance with the Arconic Site Conditions.
- DD. All nails and screws protruding from lumber, boards, or other materials shall be withdrawn or bent into the material before it is stacked or piled.
- EE. Food and drink are only allowed in designated eating and break areas.
- FF. Audio devices, earbuds, and headsets are prohibited unless solely for Project communication means.
- GG. Smoking is only allowed in designated smoking areas. All designated smoking areas must be delineated by flagging tape or other means and be equipped with a butt can and a fire extinguisher.
- HH. No one will be allowed to enter the Project Site without proper photographic identification.
- II. The Contractor shall not prop open exit doors or any fire-rated door designed to remain closed.
- JJ. Throwing or dropping materials from one level to another is prohibited.
- KK. The Contractor shall prepare and submit a Daily Float Plan to the Construction Manager before boats or vessels depart from their mooring or launch locations. The Daily Float Plans shall be prepared using the USCG Float Plan template or other format approved by the Construction Manager. The Contractor shall notify the Construction Manager immediately if there is a delay or if plans change. The Contractor shall notify the Construction Manager to close each Daily Float Plan upon returning to the dock.
- LL. The Contractor shall perform a task assessment and if warranted provide field personnel adequate cold-weather gear/PPE for on-water work when the combined air and water temperature is less than 90 °F.
- MM. The Contractor shall assist the Construction Manager and ARP in evaluation of safety compliance data collected by the Construction Manager and Contractor personnel. The purposes of these joint evaluations are to assess the need for modifying safety procedures or conducting other corrective or mitigative actions to meet the requirements of this Specification.

### 3.05 TRAINING

- A. The Contractor shall be responsible for training its employees and ensuring subcontractor personnel are trained. The Contractor shall comply with all applicable training requirements, including those listed in the Arconic Site Conditions. The Contractor shall be responsible for ensuring only personnel having successfully completed the required training are permitted to enter the Project Site. Documentation of training for all Contractor and subcontractor personnel shall be provided to the Construction Manager prior to the individual(s) arriving on site. This documentation shall be maintained on the Project Site by the Contractor at all times and be made accessible to the Construction Manager.
- B. All Contractor and subcontractor personnel who are potentially in direct contact with contaminated sediment, water, and debris, and potentially impacted materials shall, at a minimum, have up-to-date 40-hour HAZWOPER training and applicable 8-hour annual HAZWOPER refresher training, and be in a medical surveillance and monitoring program. Project Site workers that are not in compliance with these training requirements and medical monitoring will not be allowed on the Project Site.
- C. Employees that are required to respond to hazardous or emergency situations shall be trained to their level of responsibility per 29 CFR 1910.120(q) and 29 CFR 1926.65(q).
- D. The Contractor's Emergency Response Plan shall be rehearsed annually as part of the overall training program for Project Site operations. The Emergency Response Plan rehearsal shall be coordinated with the Construction Manager and shall consist of a full field drill simulating a fire or medical emergency. Simulated events shall be conducted annually for both land and marine scenarios and be within an Exclusion Zone (if applicable).
- E. Contractor supervisors shall have completed a 30-hour OSHA construction safety training session and such training documentation shall be provided to the Construction Manager prior to starting Work on the Project Site.
- F. Contractor personnel working on dredges, barges, and other marine vessels or docks shall be trained in the minimum requirements and procedures for handling soft and hard lines.
- G. Vessel operators shall demonstrate training and experience that qualifies them for their assignment, and the Contractor shall submit documentation of such to the Construction Manager for approval prior to starting Work. Tug boat captains shall demonstrate at least 10 years of relevant experience, and first mates shall demonstrate at least 5 years of relevant experience. Any tug boat operator shall be in possession of at least a current Master, 100 Tons Merchant Mariner Credential. Operators of small craft supporting dredging operations shall be in possession of at least a current Operator of Uninspected Passenger Vessel Merchant Mariner Credential.
- H. The Contractor shall keep applicable employee training documentation onsite for audit by the Construction Manager or designee for all personnel assigned to work on the Project.

### 3.06 MEETINGS

- A. The Contractor shall participate in a Pre-Construction Health and Safety Coordination Meeting with the Construction Manager and ARP at the Project Site prior to mobilization each construction season. The Contractor's Project Manager, Superintendent, SSHO, and CRP are required to attend these meetings.
- B. All Contractor and subcontractor personnel shall attend an annual Project Orientation session prior to performing Work or entering the Project Site. The Project Orientation will be led by the

Construction Manager, ARP, or designee and will be offered on a pre-scheduled basis as communicated by the Construction Manager. All Contractor and subcontractor personnel are required to attend the Project Orientation on an annual basis prior to performing any Work at the Project Site.

- C. The Contractor's Superintendent, SSHO, and CRP shall conduct an annual Pre-Job Safety Meeting prior to commencement of Work at the Project Site to inform all Contractor and subcontractor personnel of the following items: Project Site conditions; contaminants of concern present; health and safety hazards, procedures, and controls; HASP requirements; and contingency actions. The Pre-Job Safety Meeting shall be held at least 3 working days prior to the commencement of the Work. The Contractor shall also inform new personnel of the Project Site conditions and health and safety requirements on a continuous basis. If changes in scope, materials, or methods used are selected after the Pre-Job Safety Meeting, Project personnel shall be notified of the changes and any HASP revisions.
- D. The Contractor shall conduct a daily construction meeting or referred to as a "toolbox" or "tailgate" safety meeting prior to the start of each work shift. The daily construction meetings shall cover relevant safety topics, discussion of the prior day's activities, planned activities for the day, review of Daily Float Plans, and safety hazards and controls. Each daily construction meeting shall be documented. JSAs shall be incorporated and reviewed into the daily construction meetings. Employees shall sign in daily at the daily construction meetings, as well as sign a copy of the JSA that is reviewed at the daily construction meetings. See Section 01 31 00 – Project Management and Coordination for additional details related to daily construction meetings.
- E. The Contractor shall participate in Construction Manager-led safety meetings, when requested.

### 3.07 WORKER SAFETY OBSERVATION REPORTING PROGRAM

- A. The Contractor shall implement a Worker Safety Observation Reporting Program, which includes observing a worker's behaviors and activities. Observations can be general or against the written JSA for the task being performed under observation.
- B. Observations shall be documented and are subject to audit by the Construction Manager or ARP.
- C. The Contractor must be able to demonstrate to the Construction Manager and ARP that the observations are reviewed, deficiencies are noted, and effective methods of correcting those deficiencies are employed.
- D. The observation program shall include timely feedback session with the observer, observee, and observee's supervisor to review positive and questionable behaviors.
- E. Worker safety observations shall be conducted to the extent possible by peer employees (i.e., workers observe other workers). Guidance should be provided by the Contractor safety staff to ensure observations are in conformance with the Contract requirements.

### 3.08 HAZARD COMMUNICATION

- A. The Contractor and each subcontractor must have a written Hazard Communication Program as part of the Contractor's HASP. This program must be available on the Project Site at all times for review by all workers, the Construction Manager, and ARP. The Contractor's Hazard Communication Program shall comply with the Arconic Site Conditions, including the Arconic EHS Standard 33.052.4 (Application of the OSHA Hazard Communication Standard for Outside Contractors).

- B. The Contractor shall ensure copies of SDSs for chemicals brought onto the Project Site by the Contractor and subcontractors be maintained within a comprehensive Chemical Inventory located at the Project Site. The Chemical Inventory and SDSs shall be made available to all Project Site personnel at all times and to the Construction Manager upon request.

### 3.09 MEDICAL SURVEILLANCE

- A. Contractor and subcontractor personnel shall participate in a medical surveillance program in compliance with 29 CFR 1910.120(f) and as required based on the substances that the employees will or could be exposed.
- B. Contractor and subcontractor personnel required to wear a respirator shall be trained, medically qualified, and fit tested on an annual basis as per 29 CFR 1910.134.
- C. In accordance with Arconic Dive Safety Standard for Commercial Air Diving Operations, persons associated with diving shall have a medical examination appropriate to their assigned tasks, clearing them to safely perform their duties.

### 3.10 MONITORING

- A. The Contractor shall monitor air quality per 29 CFR 1910.120(h) and 29 CFR 1926.65(h) and in accordance with the Contractor's HASP. The information collected shall be provided to the Construction Manager daily in accordance with this Specification.
- B. Assessment and evaluation of field personnel exposures to airborne contaminants through integrated monitoring shall be performed by the SSO.
- C. The Contractor's monitoring program shall establish action trigger levels for contaminants, odors, and dust designed to be protective of worker health and safety, and compliant with the applicable federal, state, and local requirements. When there is a difference between one or more published exposure limits for a chemical of concern, the more conservative exposure limit will be used for determining an action level.
- D. The monitoring program shall include descriptions of suppression and control measures to be implemented if air monitoring results exceed the action levels.
- E. All monitoring equipment shall be provided by Contractor and shall be maintained and calibrated per ACGIH and NIOSH analytical methods or the manufacturers' instructions, or both. A daily log of all instrument readings, as well as field reference checks and calibration information, must be maintained by the Contractor.
- F. The Contractor shall implement a program to monitor personnel onsite for heat stress. The Contractor shall incorporate an education program on how to prevent heat stress that includes: hazards of heat stress; recognition of danger signs and symptoms; awareness of first-aid, health effects of heat stroke; how to avoid heat stress; use of PPE; and medical surveillance for heat stress programs.
- G. A Hearing Conservation Program shall be implemented when noise levels exceed 85 decibels on an 8-hour time-weighted average. Noise assessments shall be completed within the Project Site work areas or on personnel where noise that exceeds the applicable OSHA standard is present.
- H. Information gathered during the monitoring program preparation and implementation shall be used by the Contractor continuously to determine appropriate safety and personnel protective measures to be implemented during Work, and to document onsite personnel exposures. The

Contractor shall use this information to implement appropriate personnel hazard control measures, contingency plans, or both.

- I. Any exceedances for employee exposures are to be verbally reported immediately to the Construction Manager. The Contractor shall submit monitoring results in summary (in writing), noting any exceedances, by 10 a.m. the following workday. Complete monitoring results shall be submitted within 7 working days of completion of monitoring activities.

### 3.11 INSPECTIONS

- A. The Contractor shall perform daily inspections of their active field work area(s) covering workplace conditions, physical facility safety, and employee work practices. Daily inspections shall be performed for all equipment, ladders, electrical cords, and other key safety equipment. Any deficiencies and corresponding corrective actions shall be documented. The daily inspections shall be documented and are subject to audit by the Construction Manager. Corrective actions shall be implemented by the Contractor within 48 hours or immediately, if deemed necessary to continue with work tasks. If corrective actions cannot be implemented within 48 hours, the Construction Manager shall be notified.
- B. The Contractor SSHO shall perform daily observations of the Contractor areas. These observations shall be documented and are subject to audit by the Construction Manager. Any deficiencies and corresponding corrective actions shall be documented and the corrective action tracked.
- C. The Construction Manager or ARP may conduct quality assurance inspections and shall have access to all the Contractor's Project-specific health and safety records.
- D. The Contractor shall allow the Construction Manager or ARP access to all operations and records as necessary to perform health and safety audits. Oversight by the Construction Manager does not relieve the Contractor of performing health and safety inspections/audits, monitoring, or any other components of the Contractor HASP.
- E. Cranes and rigging equipment shall be visually inspected prior to each shift by a competent person. The inspection shall include observation for deficiencies during operation. The inspection shall be written and a copy submitted to the Construction Manager daily.

### 3.12 EMERGENCY/CONTINGENCY PLANNING

- A. At a minimum, the Contractor's HASP shall include an Emergency Response Plan that describes emergency procedures for occurrences such as personal injury, fire, spills, and exposure to toxic substances. The SSHO shall instruct all personnel, including subcontractor personnel, on the Project Site during the daily safety briefings concerning these safety procedures.
- B. Emergency response procedures shall include employee training, alert systems, escape routes and procedures, critical operations or equipment, rescue and medical duty assignments, designation of responsible parties, emergency reporting procedures, and methods to account for all employees after evacuation.
- C. Emergency contact information shall be included in the Contractor's HASP and shall be posted by the Contractor in accessible areas near the Work.
- D. Should any unforeseen hazardous condition that may affect worker or public safety or the completion of this Work become evident, it shall be the SSHO's responsibility to bring the unforeseen hazardous conditions to the attention of the Construction Manager immediately,



verbally and in writing. The SSHO shall take prudent action to establish and maintain safe working conditions and safeguard all Project Site personnel, the public, and the environment.

- E. The Contractor shall make arrangements with an ambulance service, medical professionals, and hospitals for the emergency treatment of its employees prior to commencing Work on the Project Site.

### 3.13 INCIDENT REPORTING AND INVESTIGATION

- A. In the event of a safety incident (e.g., injuries, Stop Work directive, near misses, and vehicle accidents) occurring during the performance of the Work, the SSHO shall report and provide details of the incident to the Construction Manager as soon as practicable and issue a written incident report. The incident report shall include a root cause analysis (i.e., identification of contributing factors relating to the incident), and describe the corrective actions that will be taken to prevent recurrence.
- B. Contractor and subcontractor personnel involved in or witnessing an incident shall report it to the responsible Contractor Superintendent, who in turn shall notify the Construction Manager. The Contractor shall develop written procedures and requirements acceptable to the Construction Manager to ensure on-time reporting of all incidents and near-misses.
- C. The Contractor shall investigate any incident and near-miss and submit a Project Incident Investigation Report to the Construction Manager within 24 hours of learning about the incident or near-miss or as otherwise agreed upon by the Construction Manager.
- D. The Construction Manager may participate in any incident or near-miss investigation. The Contractor shall provide sufficient notice to the Construction Manager of any incident or near-miss investigation so that the Construction Manager may participate.
- E. The Project Incident Investigation Report shall include the following information:
  - 1. Investigation date
  - 2. Date and time of incident
  - 3. Date and time incident reported
  - 4. Name, craft, trade, and company affiliation of all affected personnel
  - 5. Supervisor name and company affiliation
  - 6. Location of incident
  - 7. Incident classification (e.g., near miss, injury, property damage, or spill)
  - 8. Description of incident and applicable JSA (attach copy)
  - 9. Diagram(s) of incident
  - 10. Photographs of incident
  - 11. Details regarding any injury (e.g., injury type, body parts injured)
  - 12. Medical treatment received, recordable per OSHA

13. Medical treatment facility, address, and phone number
  14. Root causes, unsafe acts, conditions, personal or job factors, and management systems
  15. Corrective actions, including person(s) responsible and scheduled completion dates
  16. Witness name(s) and statements
  17. Investigation team members
  18. Follow-up and closure date
- F. The investigation team shall include members from the Contractor, the Construction Manager, ARP, affected persons, witnesses, and an uninvolved employee. The facts will be used to determine the root cause(s) of the incident or near miss.
- G. If an incident investigation determines that the root cause or contributing cause of an incident or near-miss incident was related to worker fatigue, the Construction Manager will have the authority to alter the work schedule for Contractor employees (e.g., number of hours worked per day and/or number of consecutive days worked).

#### 3.14 LOGS, REPORTS, AND RECORDKEEPING

- A. The SSHO shall maintain daily logs and reports covering the implementation of the HASP and other requirements of this Specification. The SSHO shall provide the Construction Manager with copies of all logs and reports as requested.
- B. All injuries, accidents, and illnesses occurring as a result of or during the Work must be recorded on the Contractor's or affected subcontractors' applicable OSHA forms, logs, and reports. These shall be forwarded to the Construction Manager as soon as completed by the Contractor.

#### 3.15 DECONTAMINATION

- A. The Contractor shall provide all necessary equipment and materials for personnel decontamination.
- B. The Contractor shall clearly lay out and identify the different Exclusion Zones, Contaminant Reduction Zones, and Support Zones in the field and shall limit equipment, operations, and personnel in the zones as required by the Contractor's HASP.
- C. The Contractor shall ensure barges and associated marine equipment clearly identify and separate the Support Zone from the Exclusion Zone and Contaminant Reduction Zone. Procedures and controls shall ensure cross contamination does not occur. Documented surveillance, inspections, and analyses, weekly or more often, shall ensure control of cross contamination.
- D. Personnel decontamination shall be in accordance with the Contractor's HASP.
- E. Equipment shall be decontaminated in accordance with Section 01 72 00 – Decontamination of Equipment.
- F. Personnel shall wash hands, face, and other exposed skin areas prior to breaks and eating.

- G. No clothing, shoes, or boots that come into contact with contaminated sediment shall be worn or carried off site unless first decontaminated.
- H. The Contractor shall be responsible for the collection, characterization, and proper disposal of PPE and decontamination materials. PPE may be disposed of in the Secure Landfill following collection and characterization.

**- END OF SECTION -**

**SECTION 01 35 43**

**ENVIRONMENTAL PROTECTION**

**PART 1 – GENERAL**

**1.01 REFERENCED SECTIONS**

- A. Section 01 11 00 – Summary of Work
- B. Section 01 14 00 – Work Restrictions
- C. Section 01 31 00 – Project Management and Coordination
- D. Section 01 33 00 – Submittal Procedures
- E. Section 02 81 02 – Transportation and Disposal of Waste Material

**1.02 REFERENCES**

- A. Arconic Release Response and Notification Form
- B. Grasse River Environmental Monitoring Plan (Arconic, April 2019)
- C. Grasse River Community Health and Safety Plan (CHASP; Arconic, April 2019)
- D. Grasse River Contingency Plan (Arconic, April 2019)
- E. Grasse River Construction Quality Assurance Plan (CQAP; Arconic, April 2019)
- F. U.S. Coast Guard (USCG) Regulations
- G. 40 Code of Federal Regulations (CFR) 112 (Oil Pollution Prevention)
- H. New York State Division of Environmental Remediation – Generic Community Air Monitoring Plan (Appendix 1A of DER-10)
- I. 42 U.S. Code 4901 et seq. (1972)
- J. Title 6 New York Codes, Rules, and Regulations (6NYCRR) Subpart 217-3 (Idling Prohibition for Heavy Duty Vehicles)
- K. New York State Pollution Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activity
- L. New York Standards and Specifications for Erosion and Sediment Control
- M. Village of Massena Code, Part II, Chapter 200 (Noise)

1.03 DESCRIPTION

- A. The Contractor shall provide all labor, materials, equipment, and services necessary and incidental to protecting sediment, soil, groundwater, air, and surface water resources during the implementation of the Work.
- B. The Contractor shall establish and maintain quality control for environmental protection of all items set forth herein. The Contractor shall record, on daily quality control reports or attachments thereto, any problems in complying with requirements of this Specification and corrective action taken.

1.04 SUBMITTALS

The following shall be submitted in accordance with Section 01 33 00 – Submittal Procedures.

A. Pre-Construction

- 1. Environmental Protection Plan. The Contractor shall submit a written Environmental Protection Plan that addresses protection of sediment, soil, and water and air resources; water quality control; odor control; dust control; noise control; light emission control, spill prevention and control; and compliance with the requirements of this Specification, applicable permits, and permit equivalency requirements. The Contractor shall not proceed with physical Work at the Project Site until the Construction Manager has approved the Contractor's Environmental Protection Plan. Acceptance of the Environmental Protection Plan by the Construction Manager is conditional and predicated on satisfactory performance during construction. The Construction Manager reserves the right to require the Contractor to make changes to the Environmental Protection Plan or operations if the Construction Manager determines that environmental protection requirements are not being met. The Environmental Protection Plan shall include, but not be limited to, the following information:
  - a. A list of applicable federal, state, and local laws, regulations, and permits concerning environmental protection, pollution control, and abatement that are applicable to the Contractor's proposed operations and the requirements imposed by those laws, regulations, and permits in addition to any required by the Contract.
  - b. A list of all potentially hazardous products and materials to be used at the Project Site, including material specifications and Safety Data Sheets (SDSs).
  - c. A Spill Prevention Plan that, at a minimum, includes the following information:
    - i. Spill and discharge control procedures, responses, and contingency actions to be taken to prevent accidental introduction of hazardous products, materials, and impacted sediments and liquids into any waterway, the air, or the ground.
    - ii. A description of the Contractor's secondary containment systems.
    - iii. Procedures for responding to spills or other environmental emergencies.
    - iv. Procedures, instructions, reports, and notifications in the event of an unforeseen incident requiring a spill cleanup action.
    - v. A list of the materials, equipment, and devices that will be included in the emergency response kit that will be kept at the Project Site for spill response.

- vi. A list of spill control and containment-related equipment and materials that will be kept on board vessels for spill response.
  - vii. Name of the individual on each shift who will be responsible for reporting spills, implementing and supervising the containment and cleanup, and following up with complete documentation of the incident.
  - viii. Names and locations of suppliers of containment materials and names and locations of additional oil recovery, cleanup, restoration, and disposal equipment available in case of an unforeseen spill emergency.
  - ix. Methods and procedures to be used for expeditious cleanup.
  - x. A flow chart with names and telephone numbers for alerting the Company, the Construction Manager, and applicable agencies in the event of an accidental spill or other environmental emergency.
  - xi. A description of where the plan will be kept so it is easily accessible at all times and visible to all Project personnel.
- d. Proposed locations and procedures for storing hazardous material, fuel, petroleum products, and waste material.
  - e. A description of the means, methods, materials, and equipment needed to provide primary and secondary containment for oil, fuel, and any and all other storage tanks planned for installation. If the manner in which the Contractor elects to store fuel or refuels equipment triggers the requirements for a Spill Prevention, Control, and Countermeasure (SPCC) Plan consistent with 40 CFR 112, the Contractor shall prepare, submit for review, and implement an appropriate SPCC Plan in accordance with 40 CFR 112 as part of the Environmental Protection Plan.
  - f. A description of the methods for continuously monitoring the work areas and the Staging Area to ensure sediment is not spilled or misplaced, including during dredged and excavated soil material transport and offloading.
  - g. The location of the solid waste disposal facility used for disposal of solid wastes resulting from this Project.
  - h. A description of daily housekeeping activities.
  - i. A detailed description of any in-water monitoring the Contractor will perform at their own discretion, including equipment and procedures to be used, monitoring locations, and frequencies.
  - j. A description of response actions and procedures to be implemented in the event that oil sheens are observed during debris removal, dredging, soil excavation, or cap and backfill operations; the equipment, materials, and procedures that will be used; and procedures for the management, storage, and disposal of materials used for sheen containment and control.
  - k. A description of the methods that will be implemented by the Contractor to comply with the water quality requirements and specific corrective or mitigation actions to be implemented in the event of an exceedance of the water quality criteria.

- l. A description of any dust, particulate, and airborne organic vapor monitoring that the Contractor intends to perform.
    - m. A detailed description of the methods, equipment, and materials to be used to prevent and control dust and particulate generation and migration. Include material specifications and product data for proposed control products.
    - n. A detailed description of the methods, equipment, and materials to be used to prevent and control odors, including material specifications and product data for proposed odor control products.
    - o. A detailed description of the methods, equipment, and materials to be used to control noise during the implementation of the Work.
    - p. A contingency plan in the event that action levels are exceeded for water quality, dust, polychlorinated biphenyl (PCB) emissions, or noise.
    - q. Example logs, reports, and recordkeeping.
  - 2. Prepare any necessary information to support the Staging Area Stormwater Pollution Prevention Plan (SWPPP) to be prepared by others to meet the substantive provisions of the latest SPDES General Permit for Stormwater Discharges for construction activities. Others will be responsible for implementation of the Staging Area SWPPP for the duration of the Contract. The Contractor shall provide any necessary information to update and amend the Staging Area SWPPP during the course of the Project to address any changes.
  - 3. The Contractor shall prepare and submit a SWPPP for other areas as required in accordance with the latest SPDES General Permit for Stormwater Discharges for construction activities. Any SWPPP shall be submitted to the Construction Manager for review and approval prior to construction.
  - 4. The Contractor shall prepare and submit a specific Erosion and Sedimentation Control Plan to address floodplain removal activities and other upland soil disturbance activities. The Erosion and Sedimentation Control Plan shall include material specifications and installation details for all erosion and sediment control measures, an implementation schedule, inspection and maintenance requirements, and product data and material specifications for all proposed erosion and sedimentation control materials. This Erosion and Sedimentation Control Plan may be included in the Contractor's SWPPP or submitted separately.
  - 5. The Contractor shall provide copies of any necessary and applicable permits related to fuel storage.
- B. During Construction
- 1. Provide results and data to the Construction Manager on a daily basis for any water quality or air quality monitoring performed by the Contractor. The submittal shall include the time, date, type, location, and results for any monitoring performed by the Contractor. Provide electronic copies of all laboratory analytical reports for samples collected and analyzed. Provide data in a form acceptable to the Construction Manager.
  - 2. In the event of a spill or release, the Contractor shall immediately notify the Construction Manager. The Contractor shall also be responsible for contacting and procuring a licensed Cleanup Contractor (as necessary) and coordinating with the Construction Manager for release notification requirements in accordance with the

approved Environmental Protection Plan and local, state, and federal requirements and regulations.

- a. In the event that a release to surface water occurs, the Contractor must coordinate with the Construction Manager to provide applicable notifications to the National Response Center, USCG, NYSDEC, and all other appropriate agencies. The Contractor shall assist the Construction Manager in preparing a Release Response and Notification Form. Applicable documentation shall be provided to the Construction Manager for review prior to submittal to the agencies.
- b. Within 48 hours of the completion of spill or discharge cleanup, the Contractor shall document the cleanup in a Spill and Discharge Cleanup Report. This report shall include the following, at a minimum:
  - i. Identification of the source of the spill.
  - ii. Nature and amount of material spilled.
  - iii. Estimated or actual date and time of the spill occurrence.
  - iv. Names of regulatory agencies contacted, including the date and time of such notifications.
  - v. Spill reference numbers assigned by regulatory agencies.
  - vi. A description of the spill location.
  - vii. The date and time cleanup was completed or terminated (or, if cleanup was delayed by emergency or adverse weather, the nature and duration of the delay).
  - viii. Sampling data taken prior to the cleanup and a description of the sampling methodology used to establish the spill boundaries.
  - ix. Sampling data taken subsequent to the cleanup to confirm the removal of the spilled material.
  - x. If release was to a solid surface, a description of the solid surface cleaned and the wash and rinse method used.
  - xi. If release was to surface water, approximate extent or transport and impact (including size of sheen, if generated).
  - xii. A certification statement signed by the Contractor stating that cleanup requirements have been met and the information contained in the record is true to the best of their knowledge.
  - xiii. A description of corrective actions taken to prevent future releases.
  - xiv. Copies of the documents and certifications submitted to the Construction Manager for review and acceptance.
3. Daily Activities Report. In accordance with Section 01 31 00 – Project Management and Coordination, the Contractor shall include the following in the Daily Activities Report:



- a. Inspection and maintenance details of erosion and sediment controls including the date, time, personnel performing the inspection, and results of the inspections (inclusive of any maintenance or repair performed).
  - b. Documentation of any notification details received from the Construction Manager in the event of a water quality, dust, PCB emission, or noise monitoring exceedance, including the name of the notifying party and date and time of the notification.
  - c. Date and time of a noncompliance notification with the provisions of this Specification; federal, state, or local laws or regulations; permits and permit equivalencies; and other elements of the Contractor's Environmental Protection Plan as provided by the Construction Manager.
4. Submit follow-up reports within 24 hours for any exceedances of the specified water quality, dust, PCB-emission, or noise requirements. Include a description of the incident, causes of the exceedance, and actions taken to mitigate the exceedance and prevent the incident from recurring.

#### 1.05 ENVIRONMENTAL REQUIREMENTS

- A. All environmental pollution shall be prevented, abated, and controlled. Environmental degradation arising from construction activities shall be minimized through compliance with all permit, permit equivalency, and license conditions and requirements; applicable federal, state, and local laws; regulations concerning environmental pollution control and abatement; and the specific requirements contained within the Specifications.

#### 1.06 PERMIT AND REGULATORY COMPLIANCE

- A. The Contractor shall comply with all requirements, terms, and conditions set forth in the environmental permits and permit equivalencies and regulatory authorizations described in Section 01 11 00 – Summary of Work.

### **PART 2 – PRODUCTS**

#### 2.01 GENERAL

- A. Equipment and machinery used for Work on or near the water shall use vegetable oil-based lubricants in all oil-to-water interfaces, unless the use of such lubricants is technically infeasible. Otherwise, use environmentally acceptable lubricants that are biodegradable, are non-toxic or minimally toxic, and are not bio-accumulative to the extent technically feasible
- B. Erosion and sediment control measures shall be designed and installed by the Contractor in compliance with the most current version of the New York Standards and Specifications for Erosion and Sediment Control.
- C. Any emission control products shall be biodegradable, non-hazardous, non-combustible, and non-reactive and shall have the capability of controlling emissions for the duration of the Project as needed.

## **PART 3 – EXECUTION**

### **3.01 GENERAL**

- A. The Contractor, their personnel, and subcontractors shall review and comply with the requirements of this Specification; permits and permit equivalency requirements for the Project; and all federal, state, and local environmental protection laws and regulations.
- B. The Contractor shall be responsible for any fines resulting from violations of construction related to environmental protection. The Contractor shall be responsible for any delays and costs resulting from failure to comply.
- C. The Contractor shall comply with and implement all SWPPP requirements. The Contractor shall employ best management practices (BMPs) and perform inspections and maintenance of the systems installed as required by the SWPPP(s). Records of inspections and maintenance conducted by the Contractor shall be maintained at the Project Site and accessible to the Construction Manager at all times.
- D. Erosion and sedimentation controls shall be installed prior to any ground disturbance above the waterline—including clearing, excavation, or other disturbances—and shall be maintained in an effective condition at all locations until construction is completed and disturbed areas are stabilized.
- E. The Contractor shall take all necessary measures to ensure that no contamination of the soil, sediments, groundwater, surface waters, or other areas will occur from any of the activities required to perform the Work or from equipment or materials used to perform the Work. The Contractor shall report all spills to the Construction Manager immediately and implement all necessary procedures, responses, and contingencies to address the spill. The Contractor shall prepare a Spill and Discharge Cleanup Report as detailed in Part 1.04.B.2.
- F. The Contractor shall maintain a supply of absorbent pads, booms, storm drain covers, spill kits, and other materials for controlling and managing spills. In the event of a spill or release, the Contractor shall immediately take appropriate steps to control the spill or release.
- G. The Contractor shall maintain onsite spill and emergency response equipment and vessels, as well as provide adequate personnel as responders during each shift.
- H. Absorbent spill cleanup materials and spill kits shall be available in fueling areas and on fueling trucks, and Project personnel shall dispose of spill kits properly after use. Project personnel shall use absorbent materials on small spills and shall promptly and properly dispose of removed materials.
- I. Decontamination procedures may be required after cleanup to remove the spilled substance residue or to reduce it to an acceptable level as determined by the Construction Manager. Complete cleanup may require removal of impacted soils, sediments, or liquids. Personnel decontamination shall include, as necessary, showers and cleansing or disposing of clothing and equipment. All impacted materials, including solvents, cloth, soil, sediment, and wood that cannot be decontaminated, must be properly containerized, labeled, and properly disposed of off site and at no additional cost to the Company.
- J. The Contractor shall be prepared to properly identify, evaluate, mitigate, and dispose of all suspected hazard materials uncovered during execution of the Work. This may include, but is not limited to, the discovery of drums and other containers, compressed gas cylinders, foreign debris, unexploded ordnance, and any other unidentified materials that may contain hazardous substances or present hazards to their crew and surrounding community. The Contractor shall

immediately notify the Construction Manager upon discovery of such materials and respond as agreed to with the Construction Manager.

- K. No toxic chemicals or other types of pollutants may be disposed of in the Project Site sewerage systems—either storm or sanitary.
- L. The Contractor is responsible for cleaning up and removing hazardous and non-hazardous waste generated on the Project Site.
- M. Each piece of equipment shall be inspected upon delivery to the Project Site and at the beginning of each shift. Equipment leaking hydraulic fluids, fuels, or any other fluid shall not be allowed on the Project Site and shall not be used until repaired.

### 3.02 TRAINING OF CONTRACTOR PERSONNEL IN POLLUTION CONTROL

- A. The Contractor shall train its personnel in all phases of environmental protection. The training shall include methods of detecting and avoiding pollution, familiarization with pollution standards, both statutory and contractual, and installation and care of facilities to ensure adequate and continuous environmental pollution control. Quality control and supervisory personnel shall be thoroughly trained in the proper use of monitoring devices and abatement equipment, and shall be thoroughly knowledgeable of federal, state, and local laws, regulations, permits, and permit equivalencies.

### 3.03 NOTIFICATION OF NON-COMPLIANCE

- A. The Construction Manager will notify the Contractor of any identified noncompliance with the provisions of; this Specification; federal, state, or local laws or regulations; permits; permit equivalencies; and other elements of the Contractor's Environmental Protection Plan. The date and time of such notice shall be recorded in the Contractor's Daily Activities Report. The Contractor shall take immediate corrective action to address noncompliance. The Contractor shall, after receipt of such notice, inform the Construction Manager of proposed corrective action and take such action as may be approved. If the Contractor fails to comply promptly, the Construction Manager may issue an order stopping all or part of the Work until the satisfactory corrective action has been taken. No time lost due to such stop orders shall be the subject of a claim for extension of time or for costs or damages from the Company. No time extensions will be granted or costs or damages allowed to the Contractor for any such suspension.
- B. Monitoring of permit, permit equivalency, or regulation compliance by the Construction Manager is for the sole benefit of the Company and shall not relieve the Contractor of the responsibility of knowing and complying with all federal, state, and local laws and regulations concerning the protection of environmental resources, nor does it relieve the Contractor of the responsibility of ensuring all environmental permit and permit equivalency requirements governing the Work are met.
- C. The Contractor shall notify the Construction Manager immediately if there is any release of fuel, lubricants, hydraulic fluids, or other materials, including inventory of residual sediment or soil, vegetation, backfill and cap materials, or debris. The Construction Manager will determine if notification to regulatory agencies is required. If notification is required, the Construction Manager will make any required calls to appropriate agencies, and the Contractor shall cooperate fully with the Construction Manager by accurately providing all requested information.

### 3.04 PROTECTION OF ENVIRONMENTAL RESOURCES

- A. The Contractor shall comply with all applicable federal, state, and local laws and regulations. The environmental resources within the Project boundaries and those affected outside the work area under this Contract shall be protected during the entire period of this Contract. The Contractor shall confine its activities to areas defined by the Drawings and Specifications. Failure to meet the requirements of the Specifications for environmental protection may result in Work stoppages or termination for default. No part of the time lost due to any such Work stoppages shall be made the subject of claims for extensions of time or for excess costs or damages by the Contractor. If the Contractor fails or refuses to promptly repair any damage caused by violation of provisions of these Specifications, the Company may have the necessary Work performed and charge the cost thereof to the Contractor.

### 3.05 PROTECTION OF WETLANDS

- A. With the exception of the dredge and excavation areas, cap areas, and habitat reconstruction areas, the Contractor shall protect all wetland areas inside and adjacent to the Project Site from erosion, siltation, scouring, and dewatering resulting from its operations. There shall be no storage of tools or materials (e.g., clearing debris, lumber, and fill dirt) within wetlands, along the shoreline in the littoral zone, or elsewhere within waters of the state, except as specified in the Specifications or on the Drawings.
- B. Appropriate erosion control barriers shall be placed at the edge of slopes adjacent to wetlands to prevent turbid runoff and erosion from entering the wetlands.

### 3.06 PROTECTION OF WATER RESOURCES

#### A. General

- 1. The Contractor shall keep construction activities under surveillance, management, and control to avoid pollution of surface water and groundwater. The Contractor shall conduct its operations in a manner that prevents and minimizes erosion and conforms to all water quality standards as required by the permits or permit equivalency and all other relevant federal, state, and local regulatory criteria.
- 2. Waste materials shall not be discharged to surface water or groundwater. The Contractor shall comply with all applicable federal, state, and local laws concerning pollution of surface water and groundwater. The Contractor is responsible for proper management of any water that may be encountered during execution of the Work.
- 3. The Contractor shall take sufficient precautions to prevent discharge of fuels, oils, bitumen, calcium chloride, and other harmful materials to the surface water and groundwater.

#### B. Water Quality Performance Criteria

- 1. The Contractor shall comply with the Water Quality Performance Criteria outlined below. These criteria include advisory and/or corrective action levels for in-river and water intake monitoring.
  - a. Water Column Monitoring at Near-field Station – Advisory Level – Compliance will be assessed by comparing the sample result against the criteria listed below to assess the need for operational adjustments.
    - 1) Total suspended solids (TSS) – 100 milligrams per liter (mg/L) greater than TSS at the upstream location at Transect 0 (T0).

- 2) PCB (Aroclor) – 0.5 microgram per liter (µg/L)
- 3) Metals
  - i. Lead (dissolved) – 2.3 µg/L
  - ii. Mercury (dissolved) – 0.77 µg/L
- 4) Polyaromatic hydrocarbons (PAHs)
  - i. Anthracene – 35 µg/L
  - ii. Benz(a)anthracene – 0.23 µg/L
  - iii. 2-Methylnaphthalene – 42 µg/L
  - iv. Naphthalene – 110 µg/L
  - v. Phenanthrene – 45 µg/L
  - vi. Pyrene – 42 µg/L
- b. Water Column Monitoring at Downstream Fixed Station (T71, Mouth) – Advisory Level – Compliance will be assessed by comparing the sample result against the criteria listed below to assess the need for operational adjustments.
  - 1) PCB (Aroclor) – 0.5 µg/L
- c. Water Column Monitoring at Far-Field Station (St. Lawrence River, SLR) – Corrective Action Level – Compliance will be assessed by comparing the sample result against the criteria listed below. The SLR monitoring station will be used as the compliance location, and exceedance of the criteria may trigger a work stoppage.
  - 1) PCB (Aroclor) – 0.5 µg/L
- d. Water Intake Monitoring – Corrective Action Level
  - 1) Turbidity – 100 NTUs above baseline level
    - i. Assessed by comparing the during remediation reading against the baseline reading.
  - 2) PCB (Aroclor) – 0.5 µg/L
    - i. Assessed by comparing the sample result against the criteria.
- C. Monitoring results for the near-field and downstream fixed monitoring stations will be compared against the Advisory Level criteria and used to assess water column conditions closest to the remedial activities. Monitoring results for the far-field and water intake stations will be compared against the Corrective Action Level criteria and used to determine if corrective action is necessary.
  1. If near-field and/or downstream fixed station monitoring results exceed the Advisory Level performance criteria listed in Parts 3.06.B.1.a or 3.06.B.1.b, the Contractor shall work with

the Construction Manager to review Work activities for obvious causes and, if necessary, evaluate possible modifications to the Work to mitigate the recurrence of an advisory level exceedances and the potential for a corrective action level exceedance at the far-field location.

2. If far-field and/or water intake station monitoring results exceed the Corrective Action Level performance criteria listed in Parts 3.06.B.1.c or 3.06.B.1.d, the Contractor shall work with the Construction Manager to review Work activities for causes and evaluate modifications to the Work to mitigate the recurrence of a corrective action level exceedance. Exceedances at the far-field or water intake locations may result in work stoppage at the direction of the Construction Manager.
- D. The Contractor shall implement BMPs, engineering controls, operational controls, and other mitigation measures necessary to maintain compliance with the Water Quality Performance Criteria listed in Part 3.06.B.1. Maintaining operations within the specified water quality performance criteria is the sole responsibility of the Contractor.
- E. Compliance Monitoring
1. Monitoring for compliance with the Water Quality Performance Criteria will be conducted by others under direction of the Company. Compliance monitoring procedures, locations, and frequencies are described in detail in the Environmental Monitoring Plan (Arconic, April 2019). The Construction Manager will provide the water quality monitoring data to the Contractor.
  2. Monitoring for TSS, turbidity, and PCBs will be performed by others daily during debris removal, dredging and excavation, and post-dredge backfilling. Samples for lead, mercury, and PAH analysis will be collected once per week for the first month of near shore dredging and excavation, debris removal, and backfilling.
  3. Monitoring for TSS and turbidity will be performed by others daily during capping operations. Samples will be collected once per day during the first month of capping for PCB analysis.
  4. The Contractor may conduct water quality monitoring at their discretion, but compliance will be based on monitoring performed by others under the direction of the Company.
  5. If the water quality monitoring data indicate any exceedance of the specified Water Quality Performance Criteria, the Contractor will be notified by the Construction Manager.
- F. The Contractor shall meet with the Construction Manager weekly, or more frequently if necessary, to jointly review the compliance monitoring results—as well as the operations, production rates, and control measures implemented by the Contractor—to assess whether modifications to Work operations are needed or if other corrective or mitigation actions are needed to maintain compliance with the Water Quality Performance Criteria.
- G. Water Quality Performance Criteria Exceedances and Corrective Action
1. If the compliance monitoring indicates any exceedance of any of the Advisory Level or Corrective Action Level Water Quality Performance Criteria listed in Part 3.06.B.1, the Contractor shall work with the Construction Manager to review Work activities to investigate the cause of the exceedance and, if necessary, evaluate possible modifications to the Work to mitigate the potential for a corrective action-level exceedance.

2. If the compliance monitoring indicates exceedance of any of the Corrective Action Level Water Quality Performance Criteria listed in Part 3.06.B.1.c or 3.06.B.1.d based on far-field station monitoring or water intake monitoring, the Contractor shall be responsible for the following actions:
  - a. The Contractor shall immediately meet with the Construction Manager to jointly review the compliance monitoring data—as well as the operations, production rates, and control measures implemented by the Contractor—to develop recommendations for corrective or mitigative action. Possible corrective actions are listed in the Contingency Plan (Arconic, April 2019).
  - b. The Contractor shall work with the Construction Manager to investigate the cause of the exceedance, submit a follow-up report to the Construction Manager, and implement procedures, engineering controls, operational controls, and other corrective measures and actions necessary to mitigate the exceedance and prevent the incident from recurring at the Contractor's sole expense.
3. The Contractor shall document any exceedance of the Water Quality Performance Criteria in the Daily Activities Report.

#### H. Sheen Response and Control

1. The Contractor shall have a vessel and crew for monitoring and deploying oil sheen control and sorbent booms and pads to address observed oil sheens at the direction of the Construction Manager.
2. At all times, the Contractor shall have sufficient sheen response personnel, booms, sorbents, vessels, and all other necessary equipment and materials on site to respond to oil sheens in accordance with this Specification. When oil sheens are present, the response crews shall be actively engaged in sheen control actions. Sheen response personnel may perform other activities when sheen response activities are not required but shall be available at the Project Site to respond quickly if sheens are observed, and they shall be dedicated to sheen response activities while sheens are present.
3. The Contractor shall monitor the water surface for the presence of oil sheens using available vantage points from ongoing Work to inspect for the presence of oil sheens and identify their development, location, appearance, drift direction, and rate of movement.
4. If the Contractor observes one or more oil sheens on the water surface, the Contractor shall immediately notify the Construction Manager. The Construction Manager will also monitor for the presence of oil sheens and will notify the Contractor if any oil sheen is observed.
5. If one or more oil sheens are observed on the water surface by the Contractor or the Construction Manager, the Contractor shall, at a minimum, implement the following responses:
  - a. The Contractor shall, within 30 minutes of the sheen observation, deploy and maintain oil containment booms, oil sorbent booms, and oil sorbent materials to intercept and control the sheen. The booms and sorbent materials shall be deployed, adjusted, and maintained in a configuration that will allow continued in-water Work within the contained area. The sorbent boom and sorbent material shall extend for the same length as the oil containment boom and shall be located on the side of the oil containment boom closest to the operation. The ends of oil containment boom(s), oil sorbent booms, and oil sorbent materials shall be secured or otherwise connected in

a manner that provides continuous coverage where deployed but does not adversely impact or hinder the operation of the dredge bucket.

- b. Once sheens are observed and the oil containment boom(s) and sorbent materials are deployed, the Contractor shall visually inspect and verify the condition and effectiveness of the position of the deployed booms and sorbent materials at least once every hour. The Contractor shall adjust the boom(s) and sorbent materials so as to maximize the potential to oil containment oil sheens.
  - c. The Contractor shall sweep areas where oil sheens are observed with sorbent material if necessary to minimize the escape of sheens downstream.
  - d. If oil sheens are observed to have collected behind the oil containment boom(s) or other stationary locations, the Contractor shall actively collect the sheens and any other floating debris in contact with the sheen.
  - e. The Contractor shall perform maintenance of all deployed oil containment boom or sorbent material at least once per shift, including but not limited to removing any trapped floating material and sheens along the boom system; and replacing ineffective, oil-laden, or worn sorbents to ensure that oil containment booms and sorbent materials function as intended. Sorbent materials shall be replaced following the requirements of this Specification, every 5 days of continuous deployment, or at the request of the Construction Manager, whichever occurs first.
  - f. When deployed, booms and sorbent materials shall remain in place at all times, except as necessary to allow vessels access. Prior to opening or removing booms and sorbent materials, the Contractor shall visually inspect the opening for the presence of sheens. If sheens are observed, sweep or actively collect the sheens prior to opening the booms. If the materials must be moved to facilitate access, the time period when the booms and sorbent materials are open shall be kept to an absolute minimum and be closed immediately after the vessel(s) passes.
  - g. If no oil sheens have been observed within 48 hours of performing an oil sheen response, the Contractor may suspend the use of oil containment booms and sorbent materials. Booms and sorbent materials shall be redeployed immediately in accordance with this Specification if oil sheens are observed in that location.
6. All used sorbents, booms, and other materials generated during the collection, control, and containment of sheens shall be removed for disposal by the Contractor in accordance with Section 02 81 02 – Transportation and Disposal of Waste Material.
- I. The Construction Manager reserves the right to suspend Work at any time as necessary if there is a water quality concern that may cause contamination of adjacent areas. The Contractor shall not be entitled to any additional compensation for suspension of Work under such conditions.

### 3.07 PROTECTION OF LAND RESOURCES

- A. Before beginning any construction, the Contractor shall identify all land resources to be preserved within the work area. The Contractor shall not remove, cut, deface, injure, or destroy land resources, including trees, shrubs, vines, grasses, topsoil, and landforms, outside of the clearing limits specified on the Drawings and Specifications without special permission from the Construction Manager. No ropes or cables shall be fastened to or attached to any trees for anchorage unless specifically authorized. The Contractor shall provide effective protection for land and vegetation resources at all times, as defined below.



- B. The Contractor's field offices, staging areas, stockpile storage, and temporary buildings shall be placed in areas approved by the Construction Manager. Temporary movement or relocation of the Contractor's facilities shall be made only upon approval by the Construction Manager.
- C. Prior to any construction, the Contractor shall mark the areas not required to accomplish the Work to be performed under this Contract. Isolated areas within the general work area that are to be saved and protected, such as wetlands, shall also be marked or fenced. The Contractor shall protect from damage all existing trees designated to remain. The Contractor shall protect tree roots from noxious materials in solution caused by runoff or spillage.
- D. Monuments and markers shall be protected before construction operations commence. Where construction operations are to be conducted during darkness, the markers shall be visible. The Contractor shall convey to its personnel the purpose of marking and protection of all necessary objects.
- E. With exception of the habitat reconstruction areas, dredge areas, and upland excavation extents, the Company will not allow any vegetation to be disturbed or removed from the project area or access areas. Refer to the Drawings for the upland removal extents. Note that amount of vegetation removed in this area shall be minimized to the extent possible.
- F. Trees and their roots, shrubs, vines, grasses, land forms, and other landscape features shall be clearly identified and protected by fencing or any other approved techniques. The Contractor shall place tree protection fencing before excavation or grading is begun and maintain in place until construction is complete.
- G. Disturbed areas. The Contractor shall effectively prevent erosion and control sedimentation through approved methods including, but not limited to, the following:
  - 1. Retardation and Control of Runoff. Runoff from the construction site or from storms shall be controlled, retarded, and diverted to protected drainage courses by means of diversion ditches, benches, and by any other erosion control measures necessary.
  - 2. The Contractor shall select, implement, and maintain erosion and sediment control measures as required by federal, state, and local laws and regulations.
- H. Disposal of Solid Wastes
  - 1. Solid wastes (excluding clearing debris) shall be placed in containers that are emptied on a regular schedule. All handling and disposal shall be conducted to prevent contamination. The Contractor shall remove all solid waste off the Project Site and dispose of it at a Company-approved disposal facility in compliance with federal, state, and local requirements for solid waste disposal. Discarded materials, other than those that can be handled in the solid waste category, will be handled as directed by the Construction Manager.
- I. Disposal of Chemical Waste
  - 1. Chemical waste shall be stored in corrosion-resistant containers, removed from the work area, and disposed of in accordance with all applicable federal, state, and local laws and regulations.
- J. Disposal of Discarded Materials
  - 1. Discarded materials, other than those that can be included in the solid waste category, shall be handled as directed by the Construction Manager.

### 3.08 PROTECTION OF FISH AND WILDLIFE RESOURCES

- A. Work shall be conducted in accordance with Section 01 14 00 – Work Restrictions.
- B. The Contractor shall keep construction activities under surveillance, management, and control to minimize interference with, disturbance to, and damage of fish and wildlife. Species that require specific attention, along with measures for their protection, shall be listed in the Contractor's Environmental Protection Plan prior to the beginning of construction operations.
- C. All Contractor personnel will be trained by the Company to identify lake sturgeon and be instructed to report any observations of lake sturgeon to the Construction Manager.
- D. In the event that a threatened or endangered species is harmed because of construction activities, the Contractor shall cease all Work and notify the Construction Manager.

### 3.09 PROTECTION OF AIR RESOURCES

- A. The Contractor shall keep construction activities under surveillance, management, and control to minimize pollution of air resources. All activities, equipment, processes, and Work operated or performed by the Contractor shall be in strict accordance with the applicable air pollution standards of the State of New York, as well as all federal emission and performance laws and standards.
- B. Dust and Particulate Control
  - 1. The Contractor shall comply with the particulate matter (PM) criteria detailed below.
    - a. Particulate matter less than 10 microns (PM<sub>10</sub>) – 0.150 milligrams per cubic meter (mg/m<sup>3</sup>) above upwind location for a 15-minute period:
      - 1) If the downwind PM<sub>10</sub> level is 0.100 mg/m<sup>3</sup> above the upwind location for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques shall be employed. Work may continue with dust suppression techniques provided that downwind PM<sub>10</sub> particulate levels do not exceed 0.150 mg/m<sup>3</sup> above the upwind level and no visible dust is migrating from the work area.
      - 2) If, after implementation of dust suppression techniques, the downwind PM<sub>10</sub> levels are greater than 0.150 mg/m<sup>3</sup> above the upwind location, Work shall be stopped, and Project Site activities shall be evaluated. Work may resume only if dust suppression measures and other controls are successful in reducing PM<sub>10</sub> levels to less than 0.150 mg/m<sup>3</sup> above background and if no visible dust is observed leaving the Project Site.
      - 3) An initial level of 0.100 mg/m<sup>3</sup> (15-minute average) at any of the monitoring stations will be established as a conservative assessment level. Readings greater than this conservative assessment level will result in onsite personnel performing a review of the background (upwind perimeter) site level. If the downwind level is determined to be greater than 0.100 mg/m<sup>3</sup> above the background (upwind perimeter) level, dust-suppression techniques will be employed to avoid an exceedance of the corrective action level.
  - 2. Maintaining operations within the specified PM requirements is the sole responsibility of the Contractor.

3. The Contractor shall strictly adhere to applicable environmental regulations for dust prevention.
4. The Contractor shall implement dust and particulate control measures throughout the duration of the Project to maintain compliance with the specified particulate criteria and to adequately protect the public and Project Site personnel so as not to create hazardous or nuisance conditions.
5. The Contractor shall keep dust down at all times, including during nonworking periods.
6. The Contractor shall wet haul routes, material stockpiles, and loading and unloading areas as needed or if requested by the Construction Manager during Work activities, and as needed or if requested by the Construction Manager during nonworking time periods, to minimize dust generation.
7. The Contractor's dust and particulate control measures shall be detailed in the Contractor's Environmental Protection Plan.

C. PCB Emissions

1. The Contractor shall comply with the PCB emission criteria below.
  - a. PCB (Aroclor) – 0.100 microgram per cubic meter ( $\mu\text{g}/\text{m}^3$ ), as measured at the compliance air monitoring stations described in the Environmental Monitoring Plan (Arconic, April 2019)
2. The Contractor shall take necessary actions to actively implement measures to prevent and control PCB emissions during the course of Work. This may require use of emission control foam or temporary covers to sediment and/or soil transport barges, material stockpiles, or other areas. The Contractor shall be prepared to provide emission control products and equipment required for application of the product(s) within 2 hours of request from the Construction Manager. The Contractor's proposed emission control methods and products shall be identified in the Contractor's Environmental Protection Plan.

D. Volatile Organic Compounds (VOCs)

1. The Contractor shall comply with the VOC criteria as detailed below.
  - a. VOC – 25 parts per million (ppm) at the downwind station for a 15-minute period:
    - 1) If the downwind VOC level is 5 ppm above the upwind station for the 15-minute period, then Work activities must be investigated and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, Work activities can proceed with continued monitoring.
    - 2) If the downwind VOC levels persist at 5 ppm over the upwind station but are less than 25 ppm, Work activities shall be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, Work activities can resume provided the VOC levels 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less (but in no case less than 20 feet), is below 5 ppm over background for the 15-minute average.
    - 3) If VOC levels at any station are above 25 ppm, activities shall be shut down.

2. The Contractor shall take necessary actions to actively implement measures to prevent and control VOC emissions during the course of Work. The Contractor shall be prepared to provide emission control products and equipment required for application of the product(s) within 2 hours of request from the Construction Manager. The Contractor's proposed emission control methods and products shall be identified in the Contractor's Environmental Protection Plan.

E. Odors

1. No objectionable odors resulting from the Work shall be allowed at the Project Site's perimeter.
2. The Contractor shall implement odor-control measures to adequately protect the public and employees of the Contractor, Subcontractors, the Company, and the construction management team so as to not create hazardous or nuisance conditions. The Contractor shall implement the measures identified in the Contractor's Environmental Protection Plan.
3. Acceptable measures include covering stockpiles, backfilling open excavations, and applying odor/organic vapor-suppression foam. The Contractor shall be prepared and equipped to apply odor-suppressing foam during all sediment handling and management activities. Once foam has been applied, disturbed surfaces, temporary stockpiles, and other odor sources shall remain foamed at all times until otherwise directed by Construction Manager.
4. The Company and/or Construction Manager reserve the right to suspend Work at any time in the event the Contractor's operations result in objectionable odors that are deemed to cause a potential safety and/or air quality issue. The Contractor shall not be entitled to any additional compensation for suspension of Work under such conditions.
5. The Contractor shall be prepared to provide odor-control products and equipment required for application of the products within 2 hours of request from the Construction Manager.

F. Burning of waste materials, rubbish, or other debris will not be permitted on or adjacent to the Project Site.

G. Tanks and containers of fuels and related products shall be controlled to minimize the emission of VOCs.

H. Heavy duty construction vehicles (diesel equipment) shall abide by NYSDEC 6NYCRR, Subpart 217-3 idling restrictions.

I. Compliance Air Monitoring

1. Monitoring for compliance with the criteria listed in Parts 3.09.B.1, 3.09.C.1, or 3.09.D.1 will be conducted by others under direction of the Company. Air monitoring data will be provided to the Contractor. Monitoring procedures, locations, and frequencies, to be conducted by others at the direction of the Company, are described in the Environmental Monitoring Plan (Arconic, April 2019).
2. Air monitoring will be conducted by others during debris removal, sediment and soil removal, contaminated sediment dewatering and processing, capping/backfill operations, and landfill operations.
3. The Contractor may conduct air monitoring at their discretion, but compliance will be based on monitoring performed by others under direction of the Company.

J. Air Monitoring Exceedances and Corrective Action

1. In the event of an exceedance of the criteria listed in Parts 3.09.B.1, 3.09.C.1, or 3.09.D.1, the Contractor will be notified by the Construction Manager. The Contractor shall include the name of the notifying party, date, and time of the notification in the Daily Activities Report. The Contractor shall coordinate with the Construction Manager to immediately investigate the cause of the exceedance and implement procedures, engineering controls, operational controls, and other corrective measures to address the source, modify practices, or implement additional engineering controls to address the exceedance and prevent recurrence. The Contractor shall submit a follow-up report documenting the actions taken to the Construction Manager.
2. In the event it becomes necessary in the opinion of the Construction Manager or the Site Safety and Health Officer (SSHO) to provide additional measures to control air emissions, the Contractor shall implement such measures immediately and at no additional cost to the Company.
3. The Construction Manager reserves the right to suspend Work at any time necessary if air emissions cause a safety or air quality concern or may cause contamination of adjacent areas. The Contractor shall not be entitled to any additional compensation for suspension of Work under such conditions.

3.10 PROTECTION FROM NOISE INTRUSIONS

- A. The Contractor shall keep construction activities under surveillance and control to minimize damage to the environment by noise and to comply with the following criteria and ordinances.
- B. The Contractor shall comply with the requirements in Section 01 14 00 – Work Restrictions.
- C. The Contractor shall implement the Work in compliance with the following noise level criteria at the perimeter of the Project Site.
  1. Residential receptors – 80 A-weighted decibels (dBA) in the daytime (maximum hourly average 7 a.m. to 10 p.m.) and 65 dBA in the evening (maximum hourly average; 10 p.m. to 7 a.m.)
  2. Commercial receptors – 80 dBA (maximum hourly average)
- D. The Contractor shall also comply with the following:
  1. Federal: 42 U.S. Code 4901 et seq. (1972)
  2. Local: Village of Massena Code, Part II, Chapter 200
- E. The Contractor shall implement BMPs to minimize noise generation, reduce noise impacts, and comply with the specified noise levels. BMPs may include, but are not limited to, use of mufflers and silencers on equipment where possible; use of critically silenced or hospital-grade generators and pumps; use of hardwired power where possible to reduce the need for generators and engines; reduction of certain activities during evening hours to lessen generated noise; locating equipment and noise sources away from potential receptors; or sheltering equipment and noise sources to reduce impacts.
- F. The use of horns, bells, or whistle signals shall be held to the minimum necessary in order to ensure an operation that is as safe and as quiet as possible.

- G. Monitoring for compliance with the noise-level requirements will be conducted by others under direction of the Company. Monitoring procedures, locations, and frequencies are described in the CQAP (Arconic, April 2019) and CHASP (Arconic, April 2019). Noise monitoring data will be provided to the Contractor. Maintaining operations within the specified noise level requirements is the sole responsibility of the Contractor. The Contractor may conduct noise monitoring at its discretion, but compliance will be based on monitoring performed by others under the direction of the Company.
1. Noise monitoring will be performed by others for 1 day at the start of a new construction activity to assess levels. If levels are acceptable at community receptor locations, routine noise monitoring will be performed monthly to assess overall Project levels, and no other specific additional monitoring will be performed until a new activity begins or the mode of operation changes significantly. Changes in mode of operations will be determined in coordination between the Contractor and Construction Manager. This decision will be made considering equipment to be used, any modifications, activities to be performed, and proximity to receptors. Any change in construction methods that will result in an increase in noise will require noise monitoring. The Contractor and Construction Manager will discuss the overall process and potential impacts to noise levels to assess the need for additional noise monitoring.
- H. In the event of a noise-level exceedance, the Contractor will be notified by the Construction Manager. The Contractor shall include the name of the notifying party, date, and time of the notification in the Daily Activities Report. The Contractor shall immediately investigate the cause of the exceedance and implement procedures, engineering controls, operational controls, and other corrective measures to address the source, modify practices, or implement additional engineering controls to address the exceedance. The Contractor shall submit a follow-up report documenting these response actions to the Construction Manager.
- I. In the event it becomes necessary in the opinion of the Construction Manager or the SSHO to provide additional measures to control noise, the Contractor shall implement such measures immediately at no additional cost to the Company.
- J. The Construction Manager reserves the right to suspend Work at any time necessary if sound levels may impact Project Site workers or the community. The Contractor shall not be entitled to any additional compensation for suspension of Work under such conditions.

### 3.11 OIL AND FUEL SPILL PREVENTION

- A. The Contractor shall take all necessary measures to prevent and control any leaks, spills, or release of oil or fuel.
- B. The Contractor shall maintain emergency response kits at the Project Site in the event of an emergency or spill. The kits shall be permanent and easily accessible to Project Site workers at all times and shall include a sufficient provision of floating phase capture device containment, sorbent materials, and related equipment (e.g., personal protective equipment, shovels, and hose bandages) to mitigate any situation, as well as clearly identified tight receptacles designed to receive spilled residues and other hazardous residual materials. Secondary emergency kits shall also be maintained at key locations on the Project Site (e.g., dredge, barges, boats, cranes). Each piece of equipment and machine shall also contain a sufficient quantity of sorbent materials to be able to intervene rapidly in the event of a spill or release.
- C. Fuel dispensers shall comply with all federal, state, and local requirements and, at a minimum, have adequate containment. Containment areas shall be cleaned by an approved method immediately after every dispensing of fuel, and wastes shall be disposed of off site in an

approved location. The Contractor shall select and implement controls and procedures to prevent and minimize leaking or spilling of fuels during fueling of vehicles or equipment.

- D. The Contractor shall perform all fueling activities under constant surveillance.
- E. Should any spilling of fuel occur, the Contractor shall immediately contain the spill to practical extent and immediately notify the Construction Manager to assure proper notifications and response to contain and recover the contaminated materials for disposal.
- F. If, during the course of remedy implementation, equipment failure occurs resulting in the discharge of fuel, oil, or other contaminants, the Contractor shall have equipment available to control the discharge and is solely responsible for management and cleanup of any spill.
- G. The Contractor shall prevent oil or other hazardous substances from entering the ground, drainage, or local waterbodies. The Contractor shall provide containment, diversionary structures, or equipment to prevent discharged oil from reaching a watercourse. Immediate action must be taken to contain and clean up any spill of oily substances, petroleum products, or hazardous substances. The Contractor shall immediately report such spills to the Construction Manager and provide one or more of the following preventive systems at each oil storage site (the provision of such preventive systems shall be approved by the Construction Manager prior to tank installation and use):
  - 1. Dikes, berms, retaining walls, culverts, curbs, gutters, or other similar structures shall be capable of containing the contents of the largest single tank.
  - 2. Spill diversion ponds shall be capable of containing the contents of the largest single tank.
  - 3. Absorbent materials shall be capable of absorbing the contents of the largest single tank.
- H. If the Contractor elects to install oil or fuel storage tanks, the details shall be provided as a component of the Contractor's Environmental Protection Plan. If the Contractor's fuel storage triggers the requirements for an SPCC, the Contractor shall prepare, submit for review, and implement an appropriate SPCC Plan as required in Part 1.04.A.1.e.
- I. Oil or fuel storage tank installation. Storage tank installation shall be constructed so that a secondary means of containment is provided for the entire contents of the tanks installed. Dikes and other structures shall be positioned or located so as to provide a secondary containment identical to that required for non-mobile storage tanks. Storage tanks shall be located where they will not be subject to flooding or washout. When it is determined the installation of containment structures or equipment to prevent discharged oil from reaching a watercourse is not practicable, a clear demonstration of such impracticability shall be submitted to the Construction Manager for approval, prior to installation or use of the storage tank. The following shall also be provided to the Construction Manager for approval prior to installation use of the storage tank:
  - 1. An Oil Spill Contingency Plan, either contained within or separate from the Contractor's Environmental Protection Plan.
  - 2. A written certification of commitment of manpower, equipment, and materials required to expeditiously control and remove the discharge oil.
- J. Liabilities. The Contractor shall be liable for the damage caused by oil or fuel spills when it can be shown the oil or fuel was discharged as a result of willful negligence or willful misconduct by the Contractor. The penalty for failure to report the discharge of oil or fuel shall be in accordance with federal, state, and local laws.

3.12 LIGHT EMISSION CONTROLS

- A. The Contractor shall supply sufficient lighting to work areas to provide safe conditions during low-light and night-time operations.
- B. All lighting shall be compliant with regulations set by the OSHA and the USCG.
- C. Controls and mitigation measures shall be implemented to minimize disturbance to adjacent properties.
- D. Lighting shall be maintained such that it is not a nuisance to the neighboring properties or the community. Lighting shall be directed toward work areas and away from neighboring properties. Measures to minimize impacts from light that shall be considered to include proper positioning of lights, beam direction, height of light masts, and shielding.
- E. The Contractor shall provide engineering controls (e.g., light shrouds, temporary light barriers, or other light-control devices) for use, as necessary, to minimize impacts from lights to neighboring properties.

3.13 POST-CONSTRUCTION CLEANUP

- A. The Contractor shall clean up all areas used for construction to the satisfaction of the Construction Manager and Company.

3.14 MAINTENANCE OF POLLUTION CONTROL FACILITIES

- A. The Contractor shall, at its expense, provide routine inspection and maintenance of permanent and temporary erosion control features until the Project is completed and accepted. If such erosion control features must be reconstructed due to the Contractor's negligence, carelessness, in the case of temporary erosion control features, or failure by the Contractor to install permanent erosion control features as scheduled, such replacement shall be at the Contractor's expense.
- B. If the Contractor, through any construction activity, degrades, destroys, or impacts the groundcover on any adjoining property, including rights-of-way, then the affected area shall be fully repaired and re-vegetated at the Contractor's expense. When the area affected is undeveloped with no maintained stand of vegetation, the repair and revegetation plan shall be proposed by the Contractor and approved by the Construction Manager. When affected areas are grassed, the sod, seeding, or plantings shall match the applicable vegetative cover and be approved by the Construction Manager

**- END OF SECTION -**



**SECTION 01 35 53**

**SECURITY PROCEDURES**

**PART 1 – GENERAL**

**1.01 REFERENCED SECTIONS**

- A. Section 01 31 00 – Project Management and Coordination
- B. Section 01 33 00 – Submittal Procedures
- C. Section 01 35 29 – Health, Safety, and Emergency Response Procedures

**1.02 REFERENCES**

- A. Arconic Massena Operations Site Conditions and Attachments (Arconic Site Conditions)

**1.03 DESCRIPTION**

- A. The Contractor is responsible for security at the Staging Area and other locations where Work shall be performed as described herein. This includes, but is not limited to, coordinating with the Construction Manager, the Company, and the Company's security personnel; coordinating with property owners; securing Contractor and subcontractor equipment and materials; producing all required Contractor and subcontractor personnel personal identification information; maintaining records for all Contractor and subcontractor personnel authorized to enter the work area; providing security signage not provided by others and maintaining all security signage; maintaining and securing all enclosures, barriers, and gates during working and non-working hours; maintaining a log registering all visitors; and performing security checks at the Project Site.

**1.04 SUBMITTALS**

- A. The following submittals shall be submitted in accordance with Section 01 33 00 – Submittal Procedures, the Contractor shall submit the following information to the Construction Manager for each Contractor and subcontractor worker who shall be assigned to routinely work at the Project Site and who will have unescorted access to the Staging Area, the Arconic Massena-West Plant (including the Secure Landfill), the Alcoa Massena-East Plant, on-water equipment, or other areas where Work will be performed.
  - 1. Name of individual
  - 2. Name of employer
  - 3. Copy of government-issued identification
  - 4. Copies of training certifications as required in Section 01 35 29 – Health, Safety, and Emergency Response Procedures
- B. Details for any proposed fencing, enclosures, barriers, gates, and signage shall be submitted to the Construction Manager for approval.

## **PART 2 – PRODUCTS**

### **2.01 SIGNAGE**

- A. Primary signage will be installed by others as part of the Staging Area construction. The Contractor shall review installed signage to determine whether supplemental signage is necessary and shall coordinate with the Construction Manager if additional signage is deemed necessary. The Contractor shall be responsible to provide additional signage at the request of the Construction Manager. At a minimum, the Contractor shall provide signage as follows:
  - 1. Caution – Construction Area – Authorized Entry Only: Placed every 25 feet along any temporary fencing and barricades surrounding work areas; signs shall be a minimum 10 inches high by 14 inches wide.
  - 2. Construction Entrance – Authorized Personnel Only – Visitors Must Report to Project Site Office: Placed at entrance to work areas; signs shall be a minimum 2 feet high by 3 feet wide.
  - 3. Caution – Construction Equipment – Authorized Entry Only: Placed as necessary aboard in-water equipment; signs shall be a minimum 2 feet high by 3 feet wide and placed for visibility from multiple directions depending on vessel configuration.

## **PART 3 – EXECUTION**

### **3.01 COMPANY-SUPPLIED SECURITY**

- A. The Company will contract directly with uniformed security personnel, who will be stationed in the guard trailer at the entrance to the Staging Area 24 hours per day, 7 days per week during the construction season to restrict access and unauthorized entry.
- B. The Company's security personnel will be responsible for the monitoring a wireless security camera system installed by others at the Staging Area.

### **3.02 CONTRACTOR SECURITY REQUIREMENTS**

- A. The Contractor shall comply with all security requirements of the Arconic Site Conditions. The Arconic Site Conditions is a document that contains expectations and requirements applicable to all Contractors, subcontractors, contracted services, and vendors. The Arconic Site Conditions document describes the Environment, Health, and Safety responsibilities and is a binding and integral part of the Contract.
- B. The Contractor shall be responsible for all costs associated with providing access restriction features, maintaining all features during construction, and removing and disposing of temporary features after the Work is completed. This includes physical restrictions (e.g., fences, gates, or other barriers), signage, and warning devices as necessary to deter trespassers and restrict unauthorized entry. Any proposed signage shall be submitted to the Construction Manager for approval.
- C. The Contractor shall ensure that existing perimeter fencing, enclosures, barriers, gates, and signage within the work area are not damaged or disturbed. The Contractor shall maintain all such features for the duration of the Work. If existing fencing or barriers are breached or removed during construction, the Contractor shall provide and maintain temporary security fencing equal to the existing to the satisfaction of the Construction Manager.

- D. The Contractor shall be solely responsible for the security and protection of the Contractor's and subcontractors' equipment, tools, supplies, and materials at all times, including areas that are accessible by water. The Contractor shall provide appropriate locking mechanisms necessary to properly secure equipment and vehicles throughout the duration of the Work. Any vandalism, damage, or theft shall be the sole responsibility of the Contractor. The Contractor shall make no claim against the Company for damages for any reason.
- E. The Contractor shall immediately report any trespassers, theft, or vandalism to the Construction Manager.
- F. The Contractor shall restrict entrance to work areas only to authorized persons with proper identification. Authorized persons include only personnel who have proper training for the specific work area and who are employed by the Company, the Construction Manager, the Engineer, the Contractor and its subcontractors, monitoring personnel representing the Company, or agency oversight personnel. No other personnel are allowed on the Project Site without written approval of the Company or the Construction Manager.
- G. For each property being accessed for performing the Work, the Contractor shall be responsible for maintaining a daily registry (log) of personnel entering and exiting the work area. The daily logs shall be submitted to the Construction Manager as part of the Daily Activities Reports as defined in Section 01 31 00 – Project Management and Coordination.
- H. All Contractor and subcontractor personnel shall sign in upon entry to the Project Site and sign out upon exit.
- I. Visitors are not allowed within the work area without the prior approval of the Construction Manager or the Company. Visitors shall be escorted at all times.
- J. Gates shall remain closed and locked during non-working hours and when not in active use during working hours. During working hours, the Contractor is responsible for controlling access to the work areas for only authorized personnel, and gates shall remain closed other than when needed for entry or exit.
- K. Contractor vehicles are only permitted within the work area for delivery of materials or when actively engaged to support the Work. Only vehicles authorized by the Construction Manager shall be allowed on the Project Site. Personnel vehicles shall park in designated parking areas.
- L. Any access cards granted to Contractor and subcontractor personnel shall be used only for the period of the Contract and shall be returned to the Construction Manager at the end of the Work under the Contract.
- M. The use of cameras, video equipment, and phones with built-in cameras is not permitted on the Project Site without prior approval by the Construction Manager and, if approved, shall only be used to document the progress of the Work, and the images shall be made available to the Construction Manager upon request.
- N. Guard dogs and weapons are not permitted on the Project Site.
- O. All vehicles and equipment must be identified with the Contractor's or subcontractors' company logo(s).

**- END OF SECTION -**

**SECTION 01 40 00**

**CONTRACTOR QUALITY CONTROL**

**PART 1 – GENERAL**

**1.01 REFERENCED SECTIONS**

- A. Section 01 11 00 – Summary of Work
- B. Section 01 31 00 – Project Management and Coordination
- C. Section 01 33 00 – Submittal Procedures

**1.02 REFERENCES**

- A. ASTM International (ASTM)
  - 1. ASTM D3740 – Standard Practice for Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction
  - 2. ASTM E329 – Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection

**1.03 DESCRIPTION**

- A. This Specification describes the Contractor's construction quality control (CQC) requirements, duties, and responsibilities during execution of the Work. This Specification requires the Contractor to establish a necessary level of control that will provide sufficient information to ensure the Contractor, the Construction Manager, and the Company that requirements of the Drawings and Specifications are achieved. The Contractor shall coordinate activities and manage resources to construct the Project conforming to the Contract, on time, safely, and within budget.
- B. The Contractor shall ensure construction and CQC are accomplished in accordance with the stated purpose and the Specifications.

**1.04 SUBMITTALS**

The following submittals shall be submitted in accordance with Section 01 33 00 – Submittal Procedures.

- A. Pre-Construction
  - 1. Contractor Quality Control Plan (CQCP) – The Contractor shall submit a CQCP for review and approval by the Construction Manager prior to the start of construction. The CQCP shall detail the methods and procedures that will be conducted to ensure all materials and completed construction elements conform to the Drawings, Specifications, and other requirements (e.g., permits). The CQCP will be reviewed by the Construction Manager and must be approved prior to the commencement of the Work. The CQCP shall describe the Contractor's entire onsite and offsite CQC program, including Work by subcontractors, fabricators, suppliers, and purchasing agents. The CQCP will be used to document

inspections, monitoring, tests, surveys, and other actions to be performed by the Contractor. The CQCP shall identify personnel, procedures, methods, control, instructions, tests, records, and forms to be used to control and verify the Work. At a minimum, the CQCP shall include the following elements:

- a. Description of the quality control (QC) organization, including an organizational chart showing the various CQC team members, including a CQC Manager, along with their designated responsibilities, lines of authority, and how these personnel integrate with other management/production and construction functions and personnel. The Contractor shall identify the number of CQC staff to be present for each definable feature of Work. The Contractor shall indicate which personnel are Contractor employees and which are from an outside organization.
- b. The name, qualifications (in resume format), duties, responsibilities, and authorities of each person assigned a CQC function.
- c. Qualifications of the proposed Field Superintendent(s).
- d. Proposed laboratories and applicable certifications.
- e. A copy of a letter to the CQC Manager signed by an authorized official of the Contractor's company that describes the CQC Manager's responsibilities and delegates sufficient authorities to adequately perform the functions of the CQC Manager, including authority to stop Work that is not in compliance with the Contract.
- f. A list of the definable features of Work. A definable feature of Work is a task that is separate and distinct from other tasks, has separate control requirements, and may be identified by different trades or disciplines, or it may be Work by the same trade in a different environment. This list shall be agreed upon with the Construction Manager before the Pre-Construction Meeting described in Section 01 31 00 – Project Management and Coordination.
- g. Procedures for scheduling, reviewing, certifying, and managing submittals, including those prepared by subcontractors, offsite fabricators, suppliers, and purchasing agents. These procedures shall be in accordance with Section 01 33 00 – Submittal Procedures.
- h. A testing plan that includes control (quality assurance [QA] and QC), verification, and acceptance testing procedures for each specific test to be performed, including: the Specification paragraph requiring test; the test standard, name and type; feature of Work to be tested; test location; test frequency; test procedures; acceptance criteria; test documentation procedures; and analytical procedures, sampling standard operating procedures, chain-of-custody procedures, and person responsible for each test. Reference applicable ASTM or other methods, where appropriate.
- i. An inspection plan that includes a detailed description of the preparatory, initial, follow-up, and completion inspections and procedures that will be conducted; procedures for tracking inspections and testing; a description of any specialized training for CQC staff that will conduct inspections; a description of any equipment (including manufacturer, model number) that will be used during inspections with calibration procedures and frequencies for that equipment; the minimum frequency of each inspection; and the increase in frequency of inspections when a deficiency has been identified by the Construction Manager or the Contractor.

- j. Procedures for tracking construction deficiencies from identification through acceptable corrective action. These procedures shall establish verification that identified deficiencies have been corrected and procedures for quality improvement.
- k. Reporting procedures, including proposed reporting formats.

B. During Construction

1. Daily CQC Reports – The Contractor shall submit Daily CQC Reports, in electronic report form (PDF format), to the Construction Manager as part of the Daily Activities Report to be prepared in accordance with Section 01 31 00 – Project Management and Coordination. Daily CQC Reports do not need to be submitted for days when no Work is performed. Reports shall be signed and dated by the CQC Manager. The Daily CQC Reports shall include copies of test reports, inspection reports, punch lists, and other CQC reports prepared by all CQC personnel. The Daily CQC Reports shall include the following information:
  - a. Daily CQC Inspection Reports. Each Contractor CQC Technician and CQC Manager shall maintain a daily log of all inspections performed for Contractor and subcontractor operations on a form acceptable to the Construction Manager. The daily reports shall provide factual evidence that continual CQC inspections have been performed at all work areas. The Daily QC Inspection Reports shall be signed by the responsible CQC Technician and the CQC Manager. The daily inspection reports shall include descriptions of inspections conducted, results of inspections, location and nature of defects found, causes for rejection, and remedial or corrective actions taken or proposed and results of corrective actions taken in the field. These reports shall include test and inspection results, minutes of the associated meeting that include any discussions, and a list of attendees of the associated meeting.
  - b. Daily Test Reports. The Contractor shall prepare Daily Test Reports that include descriptions of the testing conducted, the applicable specification reference, the test location, the date of the test, testing results, location and nature of defects found, causes for rejection, and remedial or corrective actions taken or proposed and results of corrective actions taken in the field. Test results from each day's Work period shall be submitted to the Construction Manager. The Daily Test Reports shall be signed by the responsible CQC Technician and the CQC Manager.
2. The Contractor shall immediately notify the Construction Manager in writing of any identified deficiencies or non-conformance with the Specifications (see Part 3.08 and 3.09).

1.05 QUALITY ASSURANCE AND QUALITY CONTROL OF INSTALLATION

- A. The Contractor shall monitor CQC over suppliers, manufacturers, products, services, equipment, Project Site conditions, and workmanship to produce Work of specified quality.
- B. The Contractor shall comply with the manufacturer's instructions, including each step, in sequence. Should the manufacturer's instructions conflict with or differ from the Specifications and Drawings, the Contractor shall request clarification from the Construction Manager before proceeding.
- C. The Contractor shall comply with specified standards as minimum quality for the Work, except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

- D. The Contractor shall perform the Work by using persons qualified to produce required and specified quality.
- E. The Contractor shall verify field measurements are as indicated on shop drawings or as instructed by the manufacturer.
- F. The Contractor shall secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.
- G. The Contractor shall familiarize themselves with pertinent codes and standards. In procuring all items used in the Work, the Contractor shall verify the detailed requirements of the specifically named codes and standards and verify the items procured for use during the Work meet or exceed the specified requirements.
- H. The Construction Manager reserves the right to reject items incorporated into the Work that fail to meet the specified minimum requirements. The Construction Manager further reserves the right, and without prejudice to other recourse the Construction Manager may take, to accept noncomplying items subject to an adjustment in the Awarded Contract Price as approved by the Construction Manager.

#### 1.06 REFERENCES AND STANDARDS

- A. The Contractor shall provide products or workmanship specified by association, trade, or other consensus standards that comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. The Contractor shall conform to reference standard by date of issue of the Specifications, except where a specific date is established by code.
- C. The Contractor shall obtain copies of standards where required by product specification sections.
- D. All pertinent laws, ordinances, rules, regulations, and codes shall govern construction activities at the Project Site.

#### 1.07 PERMITS

- A. All Work performed by Contractor shall comply with applicable permits in accordance with Section 01 11 00 – Summary of Work.

#### 1.08 TESTING SERVICES

- A. Necessary testing of materials shall be performed by an independent testing laboratory in accordance with the respective Specification.
- B. Laboratory facilities shall be approved by the Construction Manager prior to testing.

#### 1.09 LABORATORY REQUIREMENTS

- A. These laboratory requirements apply to chemical analyses to be performed on samples of backfill and cap materials, dredged sediment, aqueous waste streams, decontamination fluids, and other chemical analyses that may be required by the Contract.

- B. The Contractor shall ensure its laboratories perform all analyses in accordance with accepted U.S. Environmental Protection Agency, Standard Method, or ASTM methods.
- C. Laboratories shall be accredited under the National Environmental Laboratory Accreditation Program (NELAP) and the New York State Environmental Laboratory Approval Program (SELAP). The Contractor shall provide documentation which demonstrates that each laboratory maintains NELAP/SELAP certification for the specific methods/matrices and analyses to be performed, as applicable.

#### 1.10 MANUFACTURER'S FIELD SERVICES

- A. When specified by the manufacturer, the Contractor shall require material or product suppliers or manufacturers to provide qualified staff personnel to observe conditions of surfaces and installation, quality of workmanship, and start-up equipment; test, adjust, and balance equipment as applicable; and initiate instructions when necessary.
- B. The Contractor shall report observations and cite decisions or instructions given to applicators or installers that are supplemental or contrary to the manufacturer's written instructions.

### PART 2 – PRODUCTS (NOT USED)

### PART 3 – EXECUTION

#### 3.01 GENERAL

- A. The Contractor is responsible for CQC of the Work. The Contractor's CQC program shall consist of an integrated system of CQC activities involving the planning, implementation, documentation, testing, inspection, reporting, and quality improvement activities to ensure the Work meets or exceeds the standards and requirements defined in the Contract Documents. The CQC program shall also consist of an overall system of technical activities that measures the attributes and performance of the Work against defined standards to verify the attributes and performance of the Work meet or exceed the standards and requirements defined in the Contract Documents. The CQC program shall cover all onsite and offsite construction and operations and shall be keyed to the proposed construction sequence. The Contractor's Project Manager and CQC Manager shall be responsible for the quality of the Work and are subject to removal by the Construction Manager for noncompliance with the quality requirements specified in the Contract Documents.
- B. The Contractor's CQC program shall provide assurance that activities affecting quality are documented within the document control system and accomplished in accordance with the Contract Documents. Provisions shall be established for communicating to all responsible individuals in the Contractor's organization that the CQC program is a mandatory requirement and shall be implemented for all portions of the Work, on site or off site.

#### 3.02 CONSTRUCTION KICK-OFF MEETING

- A. Prior to starting physical construction each construction season, the Construction Manager will schedule a Construction Kick-off Meeting as described in Section 01 31 00 – Project Management and Coordination. The meeting will be held to achieve a mutual understanding of the QC requirements, including the forms for recording the CQC operations, control activities, testing, surveys, administration of the system for onsite and offsite Work, and the interrelationship of the Contractor's CQC program and the Company's QA program administered by the Construction Manager. Subsequent conferences may be called by the Contractor or the Construction Manager to reconfirm mutual understandings or address



deficiencies in the CQC system or procedures, which may require corrective action by the Contractor.

### 3.03 CONTRACTOR'S QUALITY CONTROL ORGANIZATION

#### A. General

1. The Contractor shall provide appropriately experienced and trained CQC representation at the Project Site at all times during progress of the Work and give this individual complete authority to take any action necessary to ensure compliance with the Contract Documents.
2. The Contractor's CQC staff organization shall consist primarily of the Contractor's own employees but may be supplemented by outside organizations as needed to fulfill the CQC program. All CQC staff members shall be subject to the qualification requirements herein and to acceptance by the Construction Manager.
3. Subject to prior written approval of the Construction Manager, CQC staff may be assigned collateral duties when those duties will not interfere or conflict with carrying out their CQC duties.
4. The Contractor shall maintain a sufficient number of qualified CQC staff on site at all times when Work is actively being performed.

#### B. CQC Manager

1. The Contractor's CQC Manager shall be responsible for overall management of CQC and have the authority to act in all CQC matters on behalf of the Contractor. The CQC Manager shall have full authority to institute any and all actions necessary for the successful implementation of the CQC program to ensure compliance with the Drawings and Specifications.
2. The CQC Manager shall have a minimum of 5 years of experience in related construction work and shall have had prior CQC experience on a project of comparable scope as the Work.
3. The CQC Manager shall be a full-time employee of the Contractor or a consultant engaged by the Contractor and shall report directly to an officer of the Contractor's company.
4. The CQC Manager shall be assigned to this Project full time. CQC Technicians and other CQC staff shall report directly to the CQC Manager.
5. The CQC Manager (or a designated alternate in the event of the CQC Manager's absence) shall be on site at all times during construction.
6. An alternate for the CQC Manager, having a minimum 5 years of relevant experience, shall be identified in the CQCP to serve in the event of the CQC Manager's absence. Any alternates to the CQC Manager shall have the same level of responsibility and authority as the CQC Manager.
7. The CQC Manager's roles include:
  - a. Providing direction and leadership to CQC staff.
  - b. Training staff on inspection, reporting, documentation, and Specifications.

- c. Informing staff of modifications, changes, and revisions to the Work.
- d. Keeping staff informed of issues and concerns.
- e. Ensuring submitted documents comply with the Contract Documents.
- f. Ensuring documents are submitted within the timeframe required by the Contract Documents.

C. CQC Technicians

- 1. A sufficient number of CQC Technicians, necessary to adequately implement the CQC program, shall be provided. These personnel shall be trained as engineers, engineering technicians, or experienced craftsman and shall have a Bachelor's degree in relevant engineering or science or have a minimum of 2 years of experience in their area of expertise. The Contractor's CQCP shall clearly state the duties and responsibilities of each CQC staff member.
- 2. The CQC Technicians shall report directly to the CQC Manager and perform the following functions:
  - a. Inspection of all materials, construction, operations, services, and equipment for conformance to the Specifications, Drawings, and Contractor's submittals.
  - b. Performance of QC tests as required by the Specifications, Drawings, and Contractor's submittals.

D. Organizational Changes

- 1. When it is necessary to make changes to the CQC organization or staff, the Contractor shall revise the CQCP to reflect the changes and submit the changes to the Construction Manager for acceptance.

3.04 INSPECTION

- A. The Contractor shall establish a program for inspection of activities affecting quality and shall cover all onsite and offsite construction, operations, and laboratory work. Inspections shall be performed to verify compliance with the requirements and standards in the Contract Documents. Such inspections shall be performed by a member of the CQC organization. Inspections cannot be performed by those individuals who performed or supervised the activity being inspected. Inspections shall be performed for each shift to ensure continuing compliance with Contract requirements until completion of the particular feature of Work. The scheduling and coordinating of all inspections shall match the type and pace of Work activity. The results of inspections shall be noted on the Daily CQC Report.
- B. The four phases of inspection for all definable features of Work are as follows:
  - 1. Preparatory Inspection
  - 2. Initial Inspection
  - 3. Follow-up Inspection
  - 4. Completion Inspection

C. Preparatory Inspection

1. The Contractor shall perform preparatory inspections prior to beginning any Work on any definable feature of the Work. Preparatory inspections shall include a review of Contract requirements, including:
  - a. A review of Specifications, Drawings, and Contractor's submittals.
  - b. A check to ensure all materials and/or equipment have been tested, submitted, and approved.
  - c. A check to ensure provisions have been made to provide required testing resources, including test equipment, sampling kits and tools used by outside testing laboratories (if applicable), and additional equipment as required for testing.
  - d. Examination of the Contract work area to ascertain that all preliminary Work has been completed.
  - e. A review of all required permits and other authorizations.
  - f. A review of the reporting documentation.
  - g. A review of the Job Safety Analyses.
  - h. A physical examination of materials, equipment, and samples to ensure they conform to approved shop drawings or submittal data, all materials and/or equipment are present on site, and all equipment is properly calibrated and in proper working condition.
  - i. A review of similar Work performed and any lessons learned related to CQC.
2. Prior to commencement of the definable feature of Work, a meeting conducted by the Contractor shall be held to ensure the required preparatory inspection activities have occurred to the satisfaction of the Construction Manager and shall be attended by all key personnel responsible for the appropriate definable feature of Work. The Contractor shall notify the Construction Manager at least 24 hours in advance of the preparatory inspection meeting. Subsequent to the preparatory inspection and prior to commencement of Work, the Contractor shall instruct each applicable worker as to the acceptance level of workmanship required in order to meet the Specification, Drawing, and Contractor's submittal requirements.

D. Initial Inspection

1. The Contractor shall perform an initial inspection as soon as a representative portion of the particular feature of Work has been accomplished. A separate initial inspection shall be conducted for each new crew of workers involved in achieving the definable feature of Work. If the Work involves multiple shifts, the initial inspection shall be of the Work completed by both shifts; however, the Contractor shall clearly delineate and separately inspect the Work conducted by each shift. The initial inspection shall include:
  - a. A review of the preparatory inspection records.
  - b. Re-examination of preliminary Work.

- c. Review of specific documentation for the definable feature of Work, including any noted deficiencies.
  - d. An examination of the quality of workmanship.
  - e. A review of control testing for compliance with Contract requirements.
  - f. A review of any use of defective or damaged materials.
  - g. A review of any omissions as documented in Daily CQC Reports.
  - h. A review of compliance with dimensional requirements.
2. The Contractor shall notify the Construction Manager at least 24 hours in advance of the initial inspection. Within 24 hours of the Construction Manager's request, the Contractor shall conduct a meeting attended by all key personnel responsible for the appropriate definable feature of Work to review the results of the initial inspection.

E. Follow-up Inspection

- 1. The Contractor shall perform follow-up inspections throughout each shift to ensure continuing compliance with Contract Document requirements, including control testing, until completion of the definable feature of Work.
- 2. The frequency of follow up-inspections shall be per shift at a minimum but may be more frequent depending on the type and pace of Work activity and if any deficiencies have been noted.
- 3. Prior to the addition of new features of Work, the Contractor shall conduct a final follow-up inspection to confirm any noted deficiencies have been corrected.

F. Completion Inspection

- 1. At the completion of all Work or any increment thereof established by completion criteria stated elsewhere in the Specifications, the CQC Manager or CQC Technician shall perform a completion inspection of the Work and develop a "punch list" of items that do not conform to the requirements defined in the Specifications, Drawings, or Contractor's submittals. The punch list shall be included and submitted in the CQC documentation, as specified herein, and shall include the estimated date by which each of the deficiencies will be corrected. The Contractor shall perform a second completion inspection after all punch list items have been completed.

3.05 TESTS

- A. When testing is required by the Contract Documents, the Contractor shall establish a test program to ensure all required testing is properly identified, planned, documented, and performed under controlled and suitable environmental conditions, including cleanliness. Testing shall be performed in accordance with written test procedures described in the Contractor's CQCP. Test procedures shall incorporate or reference the requirements as contained in the Contract Documents or Contractor's submittals.
- B. The Contractor shall perform specified tests and required monitoring instrumentation or tests to verify control measures are adequate to provide an end product that conforms to Contract requirements.

- C. Upon request by the Construction Manager, the Contractor shall furnish to the Construction Manager duplicate samples of test specimens for possible testing by the Company.
- D. The Contractor shall perform the following activities and record and provide the following data:
  - 1. Verify testing standard or procedures comply with Contract requirements.
  - 2. Verify facilities and testing equipment are available and comply with testing standards.
  - 3. Check test instruments calibration data against certified standards.
  - 4. Verify recording forms and test identification control number system, including all the test documentation requirements, are prepared in accordance with Contract requirements.
- E. Results of tests and monitoring instruments, both passing and failing, shall be recorded on the Daily CQC Report for the date taken. Specification paragraph reference, location where tests were taken, and the sequential control number identifying the test shall be given. If approved by the Construction Manager, actual test reports may be submitted later with a reference to the test number and date taken. An informational copy of tests performed by an offsite or commercial test facility shall be provided directly to the Construction Manager. Failure to submit test reports as stated or to maintain adequate monitoring testing may result in nonpayment for related Work performed and disapproval of the test facility for the Contract.
- F. The Construction Manager has the right of access to assess laboratory equipment and operations in the proposed laboratories for compliance with the CQCP and to assess the laboratory's testing procedures and techniques.
- G. All testing and measuring equipment shall be individually identified, controlled, calibrated, and maintained at prescribed intervals, or prior to each use, and be traceable to certified equipment having known valid relationships to nationally recognized standards. If no national standards exist, the basis for calibration shall be documented.
- H. Equipment shall be marked to indicate calibration status. Records that include information specific to individual equipment, date of last calibration, by whom it was calibrated, and the next calibration due date shall be maintained.
- I. The scheduling and coordinating of all testing shall match the type and pace of Work activity.
- J. Costs incidental to the transportation of samples or materials shall be borne by the Contractor. Samples of materials for test verification and acceptance testing by the Company shall be delivered to Construction Manager-approved laboratory. Coordination for each specific test, exact delivery location, and dates shall be made with the Construction Manager.

### 3.06 DOCUMENTATION

#### A. RECORDS

- 1. Sufficient records shall be prepared and maintained by the Contractor as Work is performed to furnish documentary evidence of the quality of construction and laboratory analysis and of activities affecting quality. Records shall provide evidence of conformity to requirements and of the effective operation of the CQC system. Records shall be consistent with applicable portions of the Contract. Legible copies of these records shall be maintained on site, accessible to the Construction Manager, and be furnished to the Construction Manager within 24 hours of the Construction Manager's request.

2. The records shall include the results of any bathymetric or topographic surveys, reviews, inspections, tests, audits, equipment calibrations, monitoring of Work performance, and laboratory analysis. The records shall also include, as appropriate, closely related data, such as qualifications of personnel, procedures and equipment, and other documentation required by applicable parts of the Contract. Inspection and test records shall, at a minimum, identify the date of inspection or test, inspector or data recorder, type of observation, results, acceptability, and action taken in connection with any deficiencies noted. Required records shall be legible, readily identifiable, and retrievable. The Contractor shall have a documented procedure to define controls needed for the identification, storage, protection, retrieval, retention time, and disposition of records. Legible copies of these records shall be furnished to the Construction Manager within 24 hours of the Construction Manager's request.
3. Records shall cover complying and defective or noncomplying features and shall include a statement that supplies and materials incorporated in the Work comply with the Contract. Legible copies of these records shall be furnished to the Construction Manager within 24 hours of the Construction Manager's request.
4. The Contractor shall maintain onsite document storage that contains all inspection reports, test records, raw data from continuous monitors, operating logs, and material certification documents. Custody of these records will be the responsibility of the Contractor's CQC Manager. The CQCP shall include procedures for the storage of CQC records prior to the time they are turned over to the Construction Manager.

### 3.07 SURVEILLANCE BY CONSTRUCTION MANAGER

- A. Contractor operations related to the Work shall be subject to surveillance by the Construction Manager at the location the operations are performed. The Construction Manager shall have reasonable access to all operational data, including, but not limited to, equipment position, production data, logs and journal entries, survey data, and monitoring data at the point of generation.
- B. All items of material and equipment shall be subject to surveillance by the Construction Manager at the point of production, manufacture, or shipment to determine if the Contractor, producer, manufacturer, fabricator, or shipper maintains an adequate CQC system in conformance with the requirements detailed herein and the applicable Specifications and Drawings. In addition, all items of materials, equipment, and Work in place shall be subject to surveillance by the Construction Manager at the Project Site for the same purpose. Surveillance by the Construction Manager does not relieve the Contractor of performing CQC inspections of either Contractor's or subcontractor's Work either on site or off site.
- C. The Construction Manager shall be provided the opportunity to witness all pre-shipment testing of equipment or materials.
- D. The Construction Manager reserves may conduct QA sampling, testing, or surveys, as deemed necessary, to verify compliance of the Contractor's Work.
- E. Upon request, the Contractor shall allow split or duplicate samples of any material to be taken by the Construction Manager at no additional cost to the Company.

### 3.08 CONTROL OF NON-CONFORMANCE

- A. The Contractor shall take the appropriate action when a feature of Work is deemed, or believed, to be out of control (out of tolerance) to bring that feature of Work into control. The requirements for corrective action shall include general requirements for operation of the CQC program as a

whole and for individual items of Work contained in the Specifications. The Contractor shall use the results of CQC inspections and tests to determine the need for corrective action and shall define clear procedures to gauge when a feature of Work is out of control and the type of correction to be taken to regain control of the feature of Work.

- B. The Contractor shall immediately notify the Construction Manager in writing of any identified deficiencies or non-conformance with the Specifications.

### 3.09 NONCOMPLIANCE

- A. The Construction Manager will notify the Contractor of any detected noncompliance with the foregoing requirements. The Contractor shall take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor, shall be deemed sufficient notification.
- B. In cases where CQC activities do not comply with either the Contractor's CQC program or the Contract provisions, or where the Contractor fails to properly operate and maintain an effective CQC program, as determined by the Construction Manager, the Construction Manager may:
  - 1. Order the Contractor to replace ineffective or unqualified CQC personnel or subcontractors.
  - 2. Order the Contractor to stop operations until appropriate corrective action is implemented.
- C. If the Contractor fails or refuses to comply promptly, the Construction Manager may issue an order stopping all or part of the Work until satisfactory corrective action has been taken.
- D. No time lost due to such stop orders shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

**- END OF SECTION -**

**SECTION 01 42 00**

**DEFINITIONS AND ABBREVIATIONS**

**PART 1 – GENERAL**

**1.01 REFERENCED SECTIONS**

- A. Section 01 20 00 – Price and Payment Procedures
- B. Section 01 50 00 – Temporary Facilities and Controls
- C. Section 31 23 23 – Capping and Backfilling
- D. Section 35 20 23 – Dredging
- E. Section 35 55 29 – Dredged Material Processing and Handling

**1.02 REFERENCES (NOT USED)**

**1.03 DESCRIPTION**

- A. This Specification provides a summary of key definitions and abbreviations used in the Specifications and on the Drawings.

**1.04 DEFINITIONS**

- A. Access Dredging: Access Dredging refers to dredging of material not required for removal by the Dredge Prism XYZ Files that may be necessary to allow access to the bulkhead adjacent to the Staging Area and certain shallow water dredge areas and floodplain removal areas. Access dredging may include dredging within or outside of the footprint of the Dredge Management Units (DMUs). The Contractor shall be responsible for identifying the locations, extents, and depths where access dredging is necessary to conduct the Work. The locations, extents, and depths of access dredging will be subject to review and approval by the Construction Manager prior to implementation.
- B. Additional Dredge Pass: An additional dredge refers to dredging that may be directed by the Construction Manager to remove additional sediment determined to require removal under criteria established by the U.S. Environmental Protection Agency (EPA) based on the chemical analysis of post-dredging sediment cores.
- C. Additional Pass Dredge Prism XYZ Files: Electronic data point files that specify the horizontal (X and Y) and vertical (Z) extent of additional material to be removed as part of the dredging at the direction of the Construction Manager following post-dredge sampling. The electronic data files will contain X, Y, and Z values on a 1-foot-by-1-foot basis within the footprint of the required additional dredging area. See Section 35 20 23 – Dredging for additional details.
- D. Armored Cap Staged Construction Pilot Test Area: The portions of the main channel designated on the Drawings where the Contractor is required to perform pilot testing for the placement of Armored and Modified Armored Caps in accordance with Section 31 23 23 – Capping and Backfilling.



- E. Bid Form: The Bid Form is a form provided by the Company with the bid documents that shall be used by bidders to present their proposed pricing and other required information when submitting their bid in response to the request for proposal. The Bid Form includes a cover page and multiple worksheets, all of which must be completed by the bidders and provided with their proposal. The Bid Form presents a breakdown of the anticipated Contract Pay Items for the Work.
- F. Cap Certification Unit (CCUs): CCUs are portions of the Contract Work Area that will be used to verify sediment cap layer placement in accordance with the Drawings and Specifications. The cap areas will be subdivided into discrete CCUs based on location and operational considerations to facilitate timely completion of activities within individual work units. The size and configuration of CCUs will be developed in collaboration between the Construction Manager and the Contractor.
- G. Clay: Clay is fine-grained sediment that is naturally occurring and can be shaped when moist and hardened when dry; when dredged, it may adhere to or smear the dredge bucket. Areas where Clay is encountered prior to achieving the Required Elevations are subject to confirmation and approval by the Construction Manager as described in Section 35 20 23 – Dredging.
- H. Company: Company refers to Arconic, Inc.
- I. Contaminated Material: Sediment, debris, and other materials that exceed remedial action levels (RALs) for polychlorinated biphenyls (PCBs).
- J. Contract: The agreement between the Contractor and the Company to complete the Work described in the Contract Documents.
- K. Contract Documents: The Contract and associated attachments to the Contract, which include the Drawings, Specifications, and other documents, are collectively referred to as the Contract Documents.
- L. Contract Pay Item: Specific task, activity, or portion of Work defined in the Contract for which payment shall constitute full compensation for all labor, equipment, material, and supplies provided by the Contractor to complete the Work. The Contract Pay Items and associated agreed upon pricing are presented in Attachment B.1 of the Contract.
- M. Debris: Any non-sediment solid and/or manmade material identified within the remedial area. Debris may include, but not be limited to, logs, wood, boulders, concrete, brick, plastics, tires, wire, cable, metal, anchors, trash, concrete, and other miscellaneous materials.
- N. Drawings: The Drawings are graphic representations of the Work prepared or approved by the Engineer upon which the Contract is based. The Drawings show the scope, location, character, and dimensions of the prescribed Work. The Drawings are intended to be illustrative and show the purpose of the design, and they may not be an exact or complete representation of actual field conditions or the actual finished Work. Shop drawings and other Contractor submittals are not the Drawings. Drawings identified as reference drawings are neither the Drawings nor Contract Documents.
- O. Design Dredge Prism XYZ Files: Electronic data point files that specify the horizontal (X and Y) and vertical (Z) extent of material to be removed as part of the dredging. The electronic data files contain X, Y, and Z values on a 1-foot-by-1-foot basis within the footprint of the targeted dredging area plus adjoining side slope areas. See Section 35 20 23 – Dredging for additional details.

- P. Dredged Material: Materials dredged under the Contract, including all sediment and debris.
- Q. Dredge Management Unit (DMU): DMUs are portions of the work area that will be used to determine whether dredging to the Required Elevations has been accomplished and to verify backfill placement. The dredge areas will be subdivided into discrete DMUs based on locations and operational considerations to facilitate timely completion of dredging and backfilling activities within individual work units. The size and configuration of DMUs will be developed through collaboration between the Construction Manager and the Contractor.
- R. Excusable Work Stoppage: A delay or suspension of the Work due to factors not caused by or contributed to by any act or omission of the Contractor or any of their subcontractors. Excusable Work Stoppage may include interference of the Work caused by others, directives by the Construction Manager or the Company not related to Contractor performance, delays related to agency decisions or directives, extreme weather events (e.g., hurricanes and tornados), or other reasons not caused by or contributed to by any act or omission of the Contractor. See Section 01 20 00 – Price and Payment Procedures to more details related to this item and how it would apply.
- S. Hard Bottom: Hard Bottom areas are areas where the dredge bucket encounters the top of a hard surface (e.g., bedrock, boulders, or Hard Clay) that it is unable to penetrate. Hard Bottom areas are subject to confirmation and approval by the Construction Manager as described in Section 35 20 23 – Dredging.
- T. Interval Dredging: A dredging technique required in select areas of the Project Site (referred to as “Dredge and Immediate Backfill [D&IB] Areas”) to limit the potential for destabilization of upland slopes and adjacent structures. The technique involves excavating one narrow “slot” or “interval” perpendicular to the shoreline to limit the amount of material removed at any given time.
- U. Limits of Work: Limits of Work include the Grasse River, the Staging Area, select locations within the Arconic Massena-West Plant (including the Secure Landfill [SLF]), and the designated access route to and from this area); the Staging Area located along Route 131; potential secondary staging or storage at the Alcoa Massena-East Plant as approved by the Construction Manager; any other staging or support areas as approved by the Construction Manager; the upland extent of all targeted DMUs; the upland extent of targeted floodplain removal areas; and any associated access areas.
- V. Main Channel Armored Cap: A multi-layer cap to be placed between Transect (T)1 and T19 consisting of a Chemical Isolation Layer, overlain by a Gravel Filter Layer, and overlain by an Armor Layer as shown on the Drawings and described in Section 31 23 23 – Capping and Backfilling. Portions of the Main Channel Armored Cap will be overlain by Habitat Layer Material as shown on the Drawings and described in Section 31 23 23 – Capping and Backfilling.
- W. Main Channel Cap: A multi-layer cap to be placed between T21 and T72 consisting of a Chemical Isolation Layer overlain by Habitat Layer Material as shown on the Drawings and described in Section 31 23 23 – Capping and Backfilling.
- X. Main Channel Modified Armored Cap: A multi-layer cap to be placed between T19 and T21 consisting of a Chemical Isolation Layer, overlain by a Modified Armor Layer as shown on the Drawings and described in Section 31 23 23 – Capping and Backfilling. Portions of the Main Channel Modified Armored Cap will be overlain by Habitat Layer Material as shown on the Drawings and described in Section 31 23 23 – Capping and Backfilling.
- Y. Non-Target Material: Non-target material is sediment located below and/or outside the

Dredge Prism XYZ Files and Overdredge Allowance. No additional payment will be made for the removal, handling, transport, or disposal of Non-Target Material unless approved or directed in writing by Construction Manager.

- Z. Overdredge Allowance: The amount of dredging below the Required Elevations as described in Section 35 20 23 – Dredging that will be paid for removal under this Contract.
- AA. Overplacement Allowance: A thickness of backfill or capping material that may be placed by the Contractor, in addition to the minimum design thicknesses and elevations shown on Drawings and described in the Specifications. Material placed in excess of the Overplacement Allowance will not be paid for and the Contractor may be responsible for removing this excess material at no additional cost to the Company.
- BB. Overdredge Prism XYZ Files: Electronic data point files that specify the horizontal (X and Y) and vertical (Z) extent of the Overdredge Allowance. The electronic data files contain X, Y, and Z values on a 1-foot-by-1-foot basis within the footprint of the targeted dredging area plus adjoining side slope areas. See Section 35 20 23 – Dredging for additional details.
- CC. Project Site: See definition in Section 01 11 00 – Summary of Work.
- DD. Remediation Area: The Remediation Area consists of the portions of the Grasse River where dredging, backfilling, and sediment capping is planned, as shown on the Drawings.
- EE. Required Elevations: Required Elevations refer to the elevations of required sediment removal as prescribed by the Design Dredge Prism XYZ Files.
- FF. Secure Landfill (SLF): Arconic's permitted secure landfill located at the Arconic Massena-West Plant that will be used for the disposal of Contaminated Material generated during execution of the Work.
- GG. Sediment Processing Area: The portion of the Staging Area to be used to unload dredged material and water from dredged material transport scows; process, dewater, and stage dredged material and debris; and treat water generated during the dredging and dredged material handling operations. The location of the Sediment Processing Area is shown on the Drawings.
- HH. Slope Grading Fill XYZ Files: Electronic data point files that specify the horizontal (X and Y) and vertical (Z) extent of the Slope Grading Fill. The electronic data files contain X, Y, and Z values on a 1-foot-by-1-foot basis within the footprint of the areas designated for placement of Slope Grading Fill. See Section 31 23 23 – Capping and Backfilling for additional details.
- II. Specifications: Specifications define the written requirements for products, materials, equipment, services, and workmanship upon which the Contract is based, as well as the requirements for administration and performance of the Work.
- JJ. Spill: Spill is an unplanned loss or placement of materials in a location other than specified.
- KK. Staging Area: The Staging Area is the property located between County Route 42, New York State Route 131, and the Grasse River as shown on the Drawings that is designated for the Contractor's use to support the Work under the Contract. The major components of the Staging Area are being constructed by others (expected to be completed by October 2018). The Contractor shall be responsible for designing and constructing any modifications or improvements to the Staging Area, as needed, to support

the Work as described in Section 01 50 00 – Temporary Facilities and Controls and Section 35 55 29 – Dredged Material Processing and Handling.

- LL. Steep Slope Armored Cap Staged Construction Pilot Test Area: This area is the portion of the main channel designated on the Drawings where the Contractor is required to perform a pilot test for the placement of caps on steep slopes in accordance with Section 31 23 23 – Capping and Backfilling.
- MM. Work: Work means all the labor, supervision, management, professional services, studies, designs, materials, machinery, equipment, and other items required by the Contract Documents or reasonably inferable therefrom, as well as the tools, equipment, materials, services, and facilities necessary for the Contractor to fully comply with the requirements of the Contract Documents.

#### 1.05 ABBREVIATIONS

µg	microgram
3D	3-dimensional
AASHTO	American Association of State and Highway Transportation Officials
ACGIH	American Conference of Governmental Industrial Hygienists
AED	automated external defibrillator
AIS	Automatic Identification System
ANSI	American National Standards Institute
ARP	Arconic Responsible Person
ASTM	ASTM International
BMP	best management practice
CAD	Computer Aided Design and Drafting
CCLGR	Comprehensive Characterization of the Lower Grasse River
CCU	Cap Certification Unit
CDL	Commercial Driver's License
CFR	Code of Federal Regulations
CHST	Construction Health and Safety Technician
CIH	Certified Industrial Hygienist
cm	centimeter
cm <sup>2</sup>	square centimeters
COC	contaminant of concern
CQC	construction quality control
CQCP	Construction Quality Control Plan
CRP	Contractor Responsible Person
CSP	Certified Safety Professional
csv	comma separated value
cy	cubic yard
D&IB	Dredge and Immediate Backfill
dBA	decibels on an A-weighted scale
DBH	diameter at breast height
DBPS	Dredge Bucket Positioning System
DER	Division of Environmental Remediation
DGPS	Differential Global Positioning System
DMU	Dredge Management Unit
DOT	Department of Transportation

DTM	Digital Terrain Model
ECL	Environmental Conservation Law
EHS	Environmental, Health, and Safety
EPA	U.S. Environmental Protection Agency
EPP	Environmental Protection Plan
FHWA	Federal Highway Administration
g	gram
GAC	granular activated carbon
GFCI	ground-fault circuit interrupter
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations and Emergency Response
HRTD	high-risk task of the day
JSA	job safety analysis
kg	kilogram
L	liter
LNМ	Local Notice to Mariners
MCC	motor control center
mg	milligram
mm	millimeter
MUTCD	Manual on Uniform Traffic Control Devices for Streets and Highways
NAD	North American Datum
NELAP	National Environmental Laboratory Accreditation Program
NFPA	National Fire Protection Association
NIOSH	National Institute for Occupational Safety and Health
NTU	nephelometric turbidity units
NYCRR	New York Code of Rules and Regulations
NYSDEC	New York State Department of Environmental Conservation
NYSDOT	New York State Department of Transportation
O&M	Operations and Maintenance
OSHA	Occupational Safety and Health Administration
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PDF	portable document format
PEHSR	Project Environment, Health, and Safety Review
PFD	personal flotation device
PM	particulate matter
PPE	personal protective equipment
ppm	part per million
QA	quality assurance
QC	quality control
RAL	remedial action level
RCRA	Resource Conservation and Recovery Act

RFI	Request for Information
ROD	Record of Decision
RTK	Real-time Kinematic
SDS	Safety Data Sheet
sec	second
SELAP	State Environmental Laboratory Approval Program
SLF	Secure Landfill
SOR	Safety Observation Reporting
SPCC	Spill Prevention, Control, and Countermeasures
SPDES	State Pollutant Discharge Elimination System
SRMT	Saint Regis Mohawk Tribe
SSHO	Site Safety and Health Officer
SVOC	semi-volatile organic compound
SWPPP	Stormwater Pollution Prevention Plan
T	Transect
TAL	target analyte list
TCL	target compound list
TOC	total organic carbon
TSCA	Toxic Substances Control Act
TSS	total suspended solids
USACE	U.S. Army Corps of Engineers
USCG	U.S. Coast Guard
USCS	Unified Soil Classification System
USDOT	U.S. Department of Transportation
USLS35	U.S. Lake Survey of 1935
VHF	very high frequency
VOC	volatile organic compound

**PART 2 – PRODUCTS (NOT USED)**

**PART 3 – EXECUTION (NOT USED)**

**- END OF SECTION -**

**SECTION 01 50 00**

**TEMPORARY FACILITIES AND CONTROLS**

**PART 1 – GENERAL**

**1.01 REFERENCED SECTIONS**

- A. Section 00 31 00 – Available Project Information
- B. Section 01 33 00 – Submittal Procedures
- C. Section 01 35 43 – Environmental Protection
- D. Section 01 71 13 – Mobilization and Demobilization
- E. Section 01 72 00 – Decontamination of Equipment
- F. Section 02 72 00 – Water Pre-Treatment
- G. Section 02 81 02 – Transportation and Disposal of Waste Material
- H. Section 31 23 23 – Capping and Backfilling
- I. Section 35 20 23 – Dredging
- J. Section 35 55 29 – Dredged Material Processing and Handling

**1.02 REFERENCES**

- A. American National Standards Institute (ANSI) C2, National Electrical Safety Code
- B. National Fire Protection Association (NFPA) 70, National Electrical Code
- C. NFPA 101, Life Safety Code
- D. Federal Highway Administration (FHWA) National Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD)
- E. 17 New York Codes, Rules and Regulations (17NYCRR) Chapter V (New York Supplement)
- F. 16NYCRR Part 753
- G. Dig Safely New York
- H. New York State Uniform Fire Prevention and Building Code
- I. New York State Department of Labor Rules and Regulations
- J. Occupational Safety and Health Administration (OSHA) Regulations
- K. United States Coast Guard (USCG) Regulations

- L. New York State Energy Conservation Construction Code
- M. Local Codes and Ordinances
- N. County Health Department requirements
- O. New York Board of Fire Underwriters
- P. Local power company requirements and standards
- Q. Local telephone company requirements and standards

1.03 DESCRIPTION

- A. The Contractor shall furnish all labor, materials, equipment, tools, and services necessary to connect to provided potable water and electric power utility sources installed by others.
- B. The Contractor shall furnish, install, and maintain sanitary service, telephone service, internet service, and any other utilities required during execution of the Work.
- C. The Contractor shall furnish, install, and maintain all construction support facilities necessary to complete the Work, including, but are not limited to, Project trailers, storage areas, laydown areas, traffic control, lighting, signage, bulletin boards, fueling areas, temporary fencing, screens, barriers, gates, tarping stations, support vessel docks, and waste receptacles.
- D. The Contractor shall provide, install, and maintain means of water access and support vessel docking at the Staging Area for Project use by the Contractor, the Construction Manager, the Company, monitoring personnel, and other oversight personnel for the full duration of the Project.
- E. The Contractor shall provide, construct, and maintain means of vessel docking and mooring at the Staging Area for unloading dredged material, debris, removed shoreline vegetation, and water from barges and for loading barges with backfill and cap materials.
- F. The Contractor shall design, install, construct, and maintain any other modifications and improvements to the Staging Area necessary for the Work. Record Drawings showing as-built conditions of the Staging Area are provided to the Contractor as a reference document as in accordance with Section 00 31 00 – Available Project Information.
- G. The Contractor shall perform general maintenance of the Staging Area for the entire duration of the Work, including snow removal, grass mowing, and repairs due to damage or wear associated with the Work.
- H. The Contractor shall remove temporary construction items installed by the Contractor as a component of the Contract upon completion of the Work.

1.04 SUBMITTALS

The following submittals shall be submitted in accordance with Section 01 33 00 – Submittal Procedures.

- A. Pre-Construction



1. Drawings identifying proposed land the Contractor will require and use to support the Work. The Contractor shall describe the land use and equipment to be used or mobilized at these support sites and any improvements or construction to be conducted at the support sites.
2. Construction Facilities Layout Plan. The Contractor shall submit a Construction Facilities Layout Plan that, at a minimum, includes the proposed layout and sizing for changes or additions to the Staging Area, river access, vessel docking/moorings, office trailers, sanitary facilities, material storage/laydown, equipment storage/lay down, fuel storage and fueling locations, utility connections, waste storage areas, secondary containment systems, fencing/barriers, and traffic patterns.
3. River Access/Docking Plan. The Contractor shall submit plans and drawings detailing personnel access to the river and vessel docking near the River Access Ramp. The Contractor shall provide details for the proposed layout, equipment, methods, and materials for river access and docking. The Contractor shall describe the procedures for winterizing the river access and docking system at the end of each construction season and for re-deployment the following construction season.
4. Barge Unloading and Loading Plan. The Contractor shall submit plans and drawings detailing how barges and other vessels will be moored at the Staging Area to facilitate the unloading of dredged material, debris, removed shoreline vegetation, and water from barges and for loading barges with backfill/cap materials. The Contractor shall provide details for equipment and materials that will be used for mooring. The Contractor shall provide details for the drip apron and any other control measures (e.g., spill plates, splash shields) proposed by the Contractor for the barge unloading and loading zones at the Staging Area. Designs for any structures or foundations shall be signed and sealed by a Professional Engineer licensed in the State of New York.
5. Construction Lighting Plan. The Contractor shall prepare and submit a Construction Lighting Plan that, at a minimum, includes: types and locations of lighting to be used in upland and marine areas; energy sources to power the lighting; a description of specific controls, methods, and mitigation measures to minimize impacts from lights to neighboring properties; and a contingency plan in the event of power outages or if certain lights fail to operate (e.g., generator and number and availability of spare lighting equipment).
6. Traffic Control Plan. The Contractor shall prepare and submit a Traffic Control Plan prepared by a New York State-licensed Professional Engineer. At a minimum, the Traffic Control Plan shall include: a plan(s) (drawn to scale) showing the location of all designated work areas, any fixed or stationary equipment, material staging/laydown areas, traffic barriers, and proposed traffic patterns; proposed traffic-control devices, measures, and locations; proposed traffic routes for hauling backfill/cap materials from the material sources to the Staging Area; and proposed traffic routes for transporting waste materials from the Staging Area.
7. Excavation Plan. The Contractor shall submit an Excavation Plan to the Construction Manager. The plan shall not incorporate dredging or floodplain removal and shall only include excavation details that are required to support temporary construction. The Contractor shall include a figure(s) showing the proposed excavation limits and depths, along with a written description and purpose of the excavation, equipment to be used, the proposed schedule, controls that will be implemented, and the backfilling/restoration approach.

B. During Construction

1. Installed Utility Drawings. The Contractor shall submit drawings to the Construction Manager showing the surveyed locations of any utilities installed by the Contractor in accordance with Part 3.02.I.
2. The Contractor shall provide written notification to the Construction Manager immediately of any discrepancies in the utilities shown or referenced on the Drawings or in the Specifications and those observed in the field.

1.05 REGULATORY AND PERMITTING REQUIREMENTS

- A. The Contractor shall perform all required Work in compliance with all applicable codes, regulations, and requirements, including, but not limited to, the following:
1. New York State Uniform Fire Prevention and Building Code
  2. New York State Department of Labor Rules and Regulations
  3. Occupational Safety and Health Administration (OSHA) Regulations
  4. United States Coast Guard (USCG) Regulations
  5. National Electrical Safety Code, ANSI C2
  6. National Electrical Code, NFPA 70
  7. Life Safety Code, NFPA 101
  8. New York State Energy Conservation Construction Code
  9. Local Codes and Ordinances
  10. County Health Department requirements
  11. New York Board of Fire Underwriters
  12. Local power company requirements and standards
  13. Local telephone company requirements and standards
- B. The Contractor shall be responsible for obtaining, maintaining, and paying all fees and arranging all necessary inspections associated with required permits and approvals related to the Work.
- C. The Contractor shall perform all Work in compliance with all permits, regulatory approvals, and permit equivalency requirements.

1.06 EXISTING UTILITIES

- A. Approximate utility connection locations for existing electrical and water services at the Staging Area are shown on the Drawings.
- B. Existing sanitary sewer facilities are not available at the Staging Area.

- C. Existing communications/internet utilities are not available at the Staging Area.

## **PART 2 – PRODUCTS**

### **2.01 MATERIALS – GENERAL**

- A. Materials must be adequate in capacity for the required usage, must not create unsafe conditions, and must comply with the requirements of all applicable codes and standards and requirements of the Drawings and Specifications.
- B. The Contractor shall obtain from an offsite source all materials required for necessary maintenance and repair of the Staging Area throughout the execution of the Work. All materials shall conform to those provided on the Drawings and Specifications and as previously used in the construction of the Staging Area.

### **2.02 FIELD OFFICE TRAILERS**

- A. The field offices shall provide a minimum of 28 office spaces for use by the Contractor, the Construction Manager, Regulatory Agencies, the Engineer and visitors. Each field office trailer shall be furnished with work desks, chairs, and tables. Each field office trailer shall have adequate work space lighting, thermostat-controlled heating and air conditioning, a water cooler, at least one smoke alarm, at least one carbon monoxide alarm, at least one fire extinguisher, and at least two locking outside doors.
- B. The Contractor shall install and maintain electric, telephone, and internet services for each office trailer for the duration of the Work. Services shall be supplied for use by the Contractor, the Construction Manager, Regulatory Agencies, the Engineer, and visitors.
- C. Each office trailer shall have continuous electrical service of sufficient capacity and characteristic to power lights, office equipment, battery chargers, monitoring stations, and all other Work-related power equipment.
- D. Field offices shall be equipped with restrooms or a dedicated restroom trailer shall be provided. The Contractor shall be responsible for all maintenance and upkeep of restrooms.

### **2.03 CONSTRUCTION LIGHTING**

- A. The Contractor shall supply sufficient lighting to work areas to provide safe conditions during low-light or night-time operations.
- B. The Contractor shall provide construction lighting, including, but not limited to, construction light plants, equipment lights, marine lighting, and lighting for signage.
- C. All lighting shall be compliant with regulations set by the OSHA and the USCG.
- D. The Contractor shall provide engineering controls (e.g., light shrouds, temporary light barriers, or other light-control devices) for use as necessary to minimize impacts from lights to neighboring properties.

### **2.04 TRAFFIC-CONTROL DEVICES**

- A. Traffic-control devices and signage shall comply with the FHWA National MUTCD and 17NYCRR Chapter V (New York Supplement).

2.05 DOCKING SYSTEM

- A. The docking system shall be constructed of marine-grade materials and, at a minimum, include small vessel dock platforms, a non-skid ramp and gangway, railings, anchors, and mooring hardware.
- B. The docking system shall be adequately secured to an anchor system installed by the Contractor.
- C. The docking system shall be sized to accommodate docking of the Contractor's (and subcontractors) support vessels and up to six vessels approximately 20 feet in length operated by the Company, the Construction Manager, monitoring personnel representing the Company, and other oversight personnel.

2.06 STORAGE CONTAINERS

- A. Containers used for the storage of Company-supplied materials must be shipping containers constructed of welded steel or equivalent and be lockable.

**PART 3 – EXECUTION**

3.01 GENERAL

- A. The Contractor shall install temporary construction in a neat and reasonable uniform appearance that is structurally adequate for the required purposes.
- B. The Contractor shall maintain the Project Site in a neat and orderly appearance during entire construction period.
- C. The Contractor shall comply with 16NYCRR Part 753 and all Dig Safely New York rules, regulations, and procedures.
- D. The Contractor shall maintain the construction support facilities to the satisfaction of the Construction Manager for the duration of the Work. If any deficiencies are noted by the Construction Manager, the Contractor shall address such deficiencies as soon as possible and at no additional cost to the Company.
- E. Excavation shall not be performed until approved in writing by the Construction Manager. Any excavated materials shall be placed back at the point of removal or managed as directed by the Construction Manager.

3.02 UTILITIES – GENERAL

- A. Any sizing or location of existing utilities noted on the Drawings is approximate and from field observations, study of existing records, where available. Information related to existing utilities provided in the Specifications or on the Drawings is for informational purposes only. The Contractor shall be responsible for reviewing information and verifying the locations of all utilities, whether or not shown on the Drawings, and shall field verify the locations and sizing of any utilities shown on the Drawings that may affect the Work.
- B. The Contractor shall conduct a pre-construction utilities survey to field verify the locations of all underground and aboveground existing utilities prior to starting any Work that may cause damage to such utilities. If the exact location or depth of existing underground utilities is

unknown, the Contractor, prior to beginning construction, shall perform all necessary explorations and studies to locate these utilities that may affect the Work.

- C. The Contractor shall provide written notification to the Construction Manager immediately of any discrepancies in the utilities shown or referenced on the Drawings or in the Specifications and those observed in the field.
- D. The Contractor shall protect installed utilities from damage and shall be liable for all damages to existing utilities in the performance of the Work. The Contractor shall repair any damage to utilities to the satisfaction of the utility owner and the Construction Manager at no expense to the Company. The Contractor shall be responsible for all replacement and lost production costs associated with damaged utilities.
- E. The Contractor is required to coordinate as needed with utility companies and the Construction Manager during the Work. The Contractor shall inform the Construction Manager of existing utility installations that need relocation in order to complete the Work. Any such utility relocation shall be considered incidental to the Work and no separate payment will be made. Any utility-relocation operations shall be conducted only with prior coordination and approval of the applicable utility owner.
- F. Utility work shall adhere to all local, state, and federal codes and requirements.
- G. The Contractor shall use due diligence to observe sustainable and conservational utility use practices.
- H. The Contractor shall connect to and install utilities from designated points identified on the Drawings or as otherwise directed by the Construction Manager. The Contractor shall provide all materials and equipment for each utility connection and tie-in.
- I. The Contractor shall prepare drawings showing the surveyed locations of any utilities installed by the Contractor and submit them to the Construction Manager within 5 days upon completion of installation.
- J. The Contractor shall incur all costs and responsibility for startup and activation of temporary utilities.

### 3.03 TEMPORARY UTILITIES

#### A. Construction Power

- 1. The Contractor shall be responsible for confirming the available electrical power supply and the power needs (demand) to complete the Work, including identifying any necessary final motor control center (MCC) equipment, lineup, or other requirements adjustments. The Contractor shall be responsible for costs related to any revision to MCC equipment shown on the Staging Area Record Drawings.
- 2. The Contractor shall make all necessary connections to the available electrical sources at the Staging Area following approval of the Construction Manager. The Contractor shall provide all necessary equipment, materials, and services to connect to those electrical sources. Approximate locations of active electrical service at the Staging Area are shown on the Drawings. Electric service costs for the available electrical sources at the Staging Area will be paid by the Contractor.
- 3. Should the Contractor require additional power to perform the Work, the Contractor shall be responsible for upgrading the existing service or providing other means of power

(e.g., generators). All costs associated with additional temporary electrical service, including, but not limited to, permitting, inspections, fees, connection, modifications, energizing, fuel for generators, and usage charges, shall be borne by the Contractor at no additional cost to the Company. Electrical service provided by the Contractor (if any) shall be of sufficient capacity and characteristic to supply the proper current for the various types of equipment, pumps, and tools with motors, lights, and other required facilities to implement the Work. All necessary supports, connections for utility wiring, panelboards, outlets, switches, lamps, lamp holders, circuit-protection devices, controls, and accessories shall be provided by the Contractor and shall conform to all applicable federal, state, and local codes and regulations.

4. The Contractor may utilize generators for temporary power. All generators shall operate in compliance with applicable Project and local noise levels as detailed in Section 01 35 43 – Environmental Protection. All generators shall be grounded and equipped with a ground fault circuit interrupter (GFCI).
5. All temporary wiring materials and devices installed as part of the Work shall conform to applicable federal, state, and local codes and regulations and shall be completely removed by the Contractor upon completion of the Work.

#### B. Water Supply

1. The Contractor shall be responsible for confirming the water supply needs to complete the Work.
2. The Contractor shall make all necessary connections to the available water supply sources at the Staging Area following approval by the Construction Manager. The Contractor shall provide all necessary equipment, materials, and services to connect to the available water supply sources. Water supply is available at the locations shown on the Drawings. Water supply costs for the available water supply sources at the Staging Area will be paid by the Company.
3. Should the Contractor require additional water supply to perform the Work, the Contractor shall be responsible for upgrading the existing water supply service or provide other means of potable or non-potable water supply. All costs associated with additional temporary water supply, including, but not limited to, permitting, inspections, fees, transportation, connection, modifications, and usage charges, shall be borne by the Contractor at no additional cost to the Company.
4. The Contractor shall be responsible for removal of all temporary water supply lines and equipment at the completion of the Project.

#### C. Temporary Sanitary Facilities

1. The Contractor shall provide and maintain sanitary facilities for use by all Project Site workers in compliance with all applicable laws and regulations.
2. At least one of the sanitary facilities shall be dedicated to female Project personnel, and one of the sanitary facilities shall have access for persons with disabilities.
3. The Contractor shall provide sanitary facilities prior to mobilization of labor to the Project Site.
4. The Contractor shall service, clean, and maintain the temporary sanitary facilities on a minimum weekly basis, or more frequently if requested by the Construction Manager.

5. The Contractor shall be responsible for the transportation and offsite disposal of sanitary wastewater at the local publicly owned treatment works (POTW).

D. Temporary Telephone Service

1. The Contractor shall provide and pay for temporary telephone service for the Project needs of the Contractor.
2. Cellular phones may be utilized if the Contractor confirms that cellular reception/operation is reliable at the Project Site prior to the start of Work.

E. Temporary Internet Service

1. The Contractor shall provide and pay for temporary, secure, high-speed internet service for the Project needs of Project Site personnel including, but not limited to, the Contractor, the Construction Manager, Regulatory Agencies, and the Engineer during the Work.
2. Each temporary field office shall have individual wireless internet access.
3. Secure internet service shall remain active and uninterrupted for the duration of construction (full duration of the Contract). Cancellation of secure internet service for any reason at any time must be approved by the Construction Manager.
4. The Contractor shall establish and maintain an email address for the Contractor's Project Manager and Superintendent. The Contractor's Project Manager and Superintendent shall be able to send, receive, and view emails at all times throughout the duration of the Project.

F. Temporary Fuel Service

1. The Contractor shall provide and maintain temporary fuel storage facilities as needed to complete the Work.
2. Fuel storage facilities and fueling shall comply with all applicable federal, state, and local codes, rules, and regulations, and the requirements of Section 01 35 43 – Environmental Procedures.
3. The Contractor shall be responsible for removal of all temporary fuel storage facilities and equipment at the completion of the Project.
4. The Contractor shall be responsible for providing fuel at the Staging Area for vessels operated by the Construction Manager and monitoring personnel contracted directly to the Company.

G. Temporary Lighting

1. The Contractor shall provide, install, and maintain temporary lighting as necessary to sufficiently illuminate work areas to allow for the safe and complete performance of the Work and to comply with OSHA and USCG requirements.
2. The Contractor shall maintain lighting and make routine repairs as necessary.
3. The Contractor's lighting shall not interfere with or impede navigation.

4. Lighting shall be directed toward work areas and away from neighboring properties. Measures to minimize impacts from light that shall include, but are not limited to, proper positioning of lights, beam direction, height of light masts, and shielding.
5. At least 24 hours prior to undertaking Work during non-daylight or low light conditions, the Contractor shall test lighting equipment during non-daylight hours in the presence of the Construction Manager. Non-daylight hours are defined as 30 minutes before sunset to 30 minutes after sunrise.
6. Work may be stopped by the Construction Manager if lighting is deemed inadequate or unsafe. Work will not be authorized until construction lighting is deemed sufficient by the Construction Manager. The Contractor will not be provided additional compensation due to Work stoppages to address inadequate lighting.
7. Work shall stop immediately if work areas do not meet the minimum lighting requirements specified above or have been deemed unsafe. Work will only resume after the Construction Manager has determined the minimum requirements have been met and the work area is safe.

#### 3.04 OFFICE TRAILERS

- A. The Contractor shall provide office trailers in the northeast lot and one trailer near the boat ramp at the Staging Area to serve as the office space throughout the duration of the Work. One of the office trailers shall be set up as a conference room for Project meetings.
- B. The Contractor shall mobilize and set up the office trailers in the areas designated on the Drawings or as otherwise approved by the Construction Manager.
- C. The Contractor shall ensure offices are leveled and secured using fasteners or equivalent means to provide secure structures. Fasteners shall be inspected at least weekly and maintained as necessary at no additional cost to the Company.
- D. Office trailers and sheds shall remain locked when not in use.
- E. At the start of the Work, the Contractor shall provide a weatherproof, covered bulletin board not less than 36 by 48 inches in size for displaying the Project permits, safety information, and other relevant Project information. The bulletin board shall be located at the Project Site in a well-lit and conspicuous location that is easily accessible to all workers, as approved by the Construction Manager.

#### 3.05 RIVER ACCESS AND VESSEL DOCKING SYSTEM

- A. The Contractor shall provide and install river access and a docking system for support vessels operated by the Contractor, the Company, the Construction Manager, monitoring personnel representing the Company, and oversight personnel.
- B. The Contractor shall be responsible for the selection and design of the docking system subject to approval by the Construction Manager.
- C. The Contractor shall remove and winterize the docking system at the end of each construction season and redeploy the system at the beginning of each following construction season.



### 3.06 STAGING AREA CONSTRUCTION

- A. The Contractor shall construct and maintain all structures, equipment, and other features at the Staging Area necessary to complete the Work required by the Drawings and Specifications. This includes any construction required to comply with the requirements of Section 02 72 00 – Water Pre-Treatment, Section 02 81 02 – Transportation and Disposal of Waste Material, Section – 31 23 23 – Capping and Backfilling, Section 35 20 23 – Dredging, and Section 35 55 29 – Dredged Material Processing and Handling. The available work area at the Staging Area is shown on the Drawings. This shall include, but is not limited to, any needed construction for the sediment unloading area, capping material loading area, sediment processing and staging areas, water pretreatment area, decontamination areas, wheel wash station(s), personnel decontamination areas, tarping stations, laydown areas, maintenance areas, and related features and control measures. The Contractor is responsible for determining the structures, equipment, controls, and other features needed, including the sizing and layout requirements, for the proposed operations at the Staging Area. Any proposed construction at the Staging Area shall be subject to approval by the Construction Manager and shall be included in the Contractor's Construction Facilities Layout Plan.
- B. Barge Unloading and Loading Area
1. The Contractor shall design, construct, and maintain means of vessel docking and mooring at the Staging Area for unloading dredged material, debris, removed shoreline vegetation, and water from barges and for loading barges with backfill and cap materials.
  2. The Contractor shall be responsible for determining the size and layout requirements for the barge unloading and loading areas at the Staging Area.
  3. At a minimum, the barge unloading and loading areas shall include the following:
    - a. All equipment, materials, and labor to securely moor barges at the Staging Area to facilitate unloading and loading operations.
    - b. Docking facilities constructed over a length determined by the size, weight, and dimensions of the barges selected by the Contractor.
    - c. A drip apron constructed along the lift path of the unloading and loading equipment between the Staging Area and the barge to prevent material from being spilled into the water during barge unloading and loading operations. The drip apron shall be sloped toward the Staging Area so any material that drips on the apron is conveyed directly from the apron to the Staging Area.
    - d. Measures to prevent materials from being misplaced on land or in the waterway (e.g., spill plates, splash shields, secondary containment, perimeter berms, and other approved equipment or controls to prevent the loss of materials during the Work).

### 3.07 FENCING AND BARRIERS

- A. The Contractor shall provide temporary fencing, screens, barriers, gates, and signage as necessary to restrict unauthorized access to the work areas.
- B. The locations of fencing, barriers, gates, and signage shall be in accordance with approved submittals.
- C. Fencing, screens, barriers, gates, and signage shall be secured and maintained to resist high winds and other inclement weather conditions.

### 3.08 TRAFFIC CONTROL

- A. The Contractor shall schedule, coordinate, and route traffic and establish traffic-control measures to protect human health and safety, protect existing structures and equipment, and minimize interference with local traffic. The Contractor is responsible for scheduling and coordinating around local traffic. Resulting delays shall be at no additional cost to the Company.
- B. The Contractor shall install and maintain all required traffic-control devices to the satisfaction of the Construction Manager. Measures for the protection and diversion of traffic, including the provision of watchmen and flagmen, erection of barricades, installation of stop lights, and the erection and maintenance of adequate signage, shall be as required by the state and local authorities having jurisdiction. The Contractor shall conduct surveillance operations periodically each day to ensure the Contractor and the Construction Manager the devices are reasonably and adequately maintained in accordance with local, state, and federal requirements.
- C. The Contractor shall maintain safe and adequate pedestrian zones. The Contractor shall furnish and install temporary barriers as needed to create a corridor for the Contractor's equipment and trucking operations separate from pedestrian traffic.
- D. In the event the Construction Manager observes traffic conditions that, in the Construction Manager's opinion, require additional controls, these controls shall be put in place and performed by the Contractor at no additional cost to the Company.
- E. The Contractor shall provide and maintain unimpeded access to work areas for emergency vehicles at all times. The Contractor shall not block, barricade, or otherwise interfere with access to fire hydrants.
- F. Parking for personal vehicles driven by the Contractor's staff, subcontractors, and visitors shall only use designated parking areas.
- G. Construction equipment and vehicles shall not be parked or stored on public ways and shall not be parked or stored in such a manner as to restrict or obstruct traffic flow.
- H. Trucks accessing the Staging Area; hauling backfill/cap materials, equipment and other construction related materials to the Staging Area; and hauling waste materials from the Staging Area shall follow traffic routes approved by the Construction Manager. Trucks observed not following approved traffic routes may be dismissed from the Project, at the discretion of the Construction Manager.
- I. The Contractor shall investigate the adequacy of existing Public and Staging Area roads and the allowable load limit on these roads. The Contractor shall be responsible for the repair of any damage to roads caused by construction operations and/or upgrades as necessary to accommodate the Contractor's operations.

### 3.09 GENERAL MAINTENANCE

- A. The Contractor shall provide general maintenance of the Staging Area during the full duration of the construction period as necessary to safely perform the Work, including during offseason periods. General maintenance shall include, but is not limited to, cleaning, roadway repairs, lawn mowing, snow removal, trash removal, replacement of light bulbs, and other maintenance.
- B. The Contractor shall keep work areas free from waste materials, debris, and rubbish. Waste material shall be disposed of as directed by the Construction Manager.

- C. Rags, packing materials, paper cups, rubbish, and accumulations of sawdust shall be collected daily and placed in proper containers.
- D. The Contractor shall provide onsite containers for the collection of waste materials, debris, and rubbish; remove waste materials, debris, and rubbish from the Project Site periodically; and dispose of at legal disposal areas away from the Project Site.
- E. Any dirt or mud that is tracked onto paved or surfaced roadways shall be cleaned.
- F. Stored material not in trailers, whether new or salvaged, shall be neatly stacked when stored.
- G. The Contractor shall provide dumpsters or other suitable general refuse containers in coordination with the Construction Manager. The Contractor shall cover dumpsters as needed and prevent windblown trash. The Contractor shall properly dispose of waste materials off site when needed. The Contractor shall recycle material to the extent practicable.
- H. The parking area shall be maintained and kept free of oils and other materials.
- I. The Contractor is responsible for snow and ice removal, as necessary, within the work area. The Contractor shall provide snowplowing of access roads and parking areas at the Staging Area as required to maintain safe access for operations. Only sand may be used on the roadways and the parking lot during periods of ice or snow. Salt and de-icers shall not be allowed.
- J. The Contractor shall locate and manage snow piles as needed to not hinder Project construction activities or facility access or operations. Snow piles shall be located in areas approved by the Construction Manager. Snow shall not be removed from the Project Site without prior approval from the Construction Manager. Snow removed from Project Site shall be transported by truck to an approved snow disposal location. The snow disposal location selected by the Contractor shall be approved by the Construction Manager before use. Dumping of snow into the Grasse River is not permissible.
- K. The Contractor shall maintain and mow lawns within the Staging Area to keep a neat and orderly appearance. Mowing shall occur regularly during the work with the exception of the internal steep slope within the staging area roadway.

### 3.10 OFF-SEASON OPERATIONS

- A. The Contractor shall make provisions for temporarily winterizing, securing, or demobilizing equipment during offseason periods.

### 3.11 REMOVAL AND RESTORATION

- A. At the completion of the Project, the Contractor shall be responsible for the disconnection, removal, and proper disposition of all temporary utilities, temporary construction facilities, and related materials installed by the Contractor, unless approved by the Construction Manager.
- B. The Contractor shall be responsible for cutting, capping, and temporary utility service shutdown in accordance with utility provider requirements and to the satisfaction of the Construction Manager.
- C. The Contractor shall be responsible for surface restoration to match pre-Work conditions once the temporary utilities, temporary construction facilities, and related materials are removed in accordance with Section 01 71 13 – Mobilization and Demobilization.

- D. At the end of the Work, the Contractor shall decontaminate, as necessary, all construction support facilities in accordance with Section 01 72 00 – Decontamination of Equipment.

**- END OF SECTION -**

**SECTION 01 66 10**

**MATERIAL DELIVERY, STORAGE, AND HANDLING**

**PART 1 – GENERAL**

**1.01 REFERENCED SECTIONS**

- A. Section 01 33 00 – Submittal Procedures
- B. Section 01 35 29 – Health, Safety, and Emergency Response Procedures
- C. Section 01 35 43 – Environmental Protection
- D. Section 02 81 02 – Transportation and Disposal of Waste Material

**1.02 REFERENCES**

- A. Arconic Massena Operations Site Conditions and Attachments (Arconic Site Conditions)

**1.03 DESCRIPTIONS**

- A. This Specification specifies the general requirements for the delivery handling, storage, and protection for all items required in execution of the Contract. Specific requirements, if any, are specified with the related item.

**1.04 SUBMITTALS**

The following submittals shall be submitted in accordance with Section 01 33 00 – Submittal Procedures.

**A. Pre-Construction**

- 1. The Contractor shall submit a Material Storage and Handling Plan, which shall include the following details:
  - a. Figures showing material storage locations and expected timeframes the materials will be stored. The figures shall contain details on any protection of materials.
  - b. Details on the personnel and equipment required to take delivery, store, and handle all materials.
- 2. Manufacturer's instructions for the storage and handling of materials and products.

**B. During Construction**

- 1. The Contractor shall immediately notify the Construction Manager and in writing of any problems associated with product shipments and describe the proposed corrective action and schedule.

1.05 TRANSPORTATION AND DELIVERY

- A. The Contractor shall transport and handle equipment in accordance with manufacturer's instructions.
- B. The Contractor shall transport and handle soil materials in accordance with requirements of all federal, state, and local laws.
- C. The Contractor shall schedule delivery to reduce long-term onsite storage prior to installation and/or operation. Under no circumstances shall equipment or materials be delivered to the Project Site more than 1 month prior to installation without written authorization from the Company or Construction Manager.
- D. The Contractor shall coordinate delivery with installation to ensure minimum holding time for items that are hazardous, flammable, easily damaged, or sensitive to deterioration.
- E. The Contractor shall deliver products to the Project Site in manufacturer's original sealed containers or other packing systems, complete with instructions for handling, storing, unpacking, protecting, and installing.
- F. All items delivered to the Project Site shall be unloaded and placed in a manner that will not hamper the Contractor's normal construction operation or those of subcontractors and other contractors and will not interfere with the flow of necessary traffic.
- G. The Contractor shall provide necessary equipment and personnel to unload all items delivered to the Project Site. Loading and unloading operations shall be done safely and in compliance with Arconic Site Conditions.
- H. The Contractor shall promptly inspect shipments to ensure products comply with requirements, quantities are correct, and items are undamaged. For items furnished by others such as the Company, subcontractors, fabricators, or manufacturers, the Contractor shall perform inspection in the presence of the Construction Manager. The Contractor shall notify the Construction Manager verbally and in writing of any problems and describe the proposed corrective action and schedule.

1.06 STORAGE AND PROTECTION

- A. All materials and equipment to be incorporated in the Work shall be handled and stored by the manufacturer, fabricator, supplier, and Contractor before, during, and after shipment, in a manner to prevent warping, twisting, bending, breaking, chipping, rusting, and any injury, theft, or damage.
- B. The Contractor shall store and protect products in accordance with the manufacturer's instructions, with seals and labels intact and legible. Storage instruction shall be studied by the Contractor and reviewed with the Construction Manager. The Contractor shall arrange storage to permit access for inspection to the Construction Manager.
- C. The Contractor shall store loose granular materials on solid flat surfaces in a well-drained area as shown on the Drawings and as approved by the Construction Manager. The Contractor shall prevent material mixing with foreign matter.
- D. Stabilization agents (e.g., Portland cement and lime) or other special agents and materials shall be stored under a roof and off the ground and shall be kept completely dry at all times.
- E. Stored bulk materials will be protected as necessary to prevent erosion and dust generation.

- F. Precast concrete shall be handled and stored in a manner to prevent accumulations of dirt, staining, chipping, or cracking. Brick, block, and similar masonry products shall be handled and stored in a manner to reduce breakage, cracking, and spalling to a minimum.
- G. All mechanical and electrical equipment and instruments subject to corrosive damage by the atmosphere if stored outdoors (even though covered) shall be stored in a weather-tight structure to prevent damage. The structure may be an onsite temporary structure or located elsewhere, but it must be satisfactory to the Construction Manager. The building shall be provided with adequate ventilation to prevent condensation. The Contractor shall maintain temperature and humidity within range required by the manufacturer's specifications for equipment being stored.
  - 1. All equipment shall be stored fully lubricated with oil, grease, and other lubricants, unless otherwise instructed by the manufacturer.
  - 2. Moving parts shall be rotated a minimum of once weekly to ensure proper lubrication and to avoid metal-to-metal "welding." Upon installation of the equipment, the Contractor shall start the equipment, at least half-load, once weekly for an adequate period of time to ensure the equipment does not deteriorate from lack of use.
  - 3. Lubricants shall be changed upon completion of installation and as frequently as required thereafter during the period between installation and acceptance. New lubricants shall be put into the equipment at the time of acceptance.
- H. Storage and handling of contaminated material shall comply with the requirements of Section 01 35 29 – Health, Safety, and Emergency Response Procedures, Section 01 35 43 – Environmental Protection, and Section 02 81 02 – Transportation and Disposal of Waste Material.

**PART 2 – PRODUCTS (NOT USED)**

**PART 3 – EXECUTION (NOT USED)**

**- END OF SECTION -**

**SECTION 01 71 13**

**MOBILIZATION AND DEMOBILIZATION**

**PART 1 – GENERAL**

**1.01 REFERENCED SECTIONS**

- A. Section 01 33 00 – Submittal Procedures
- B. Section 01 50 00 – Temporary Facilities and Controls
- C. Section 01 35 43 – Environmental Protection
- D. Section 01 72 00 – Decontamination of Equipment
- E. Section 02 72 00 – Water Pretreatment
- F. Section 02 81 02 – Transportation and Disposal of Waste Material
- G. Section 31 23 23 – Capping and Backfilling
- H. Section 32 92 21 – Shoreline Seeding

**1.02 REFERENCES (NOT USED)**

**1.03 DESCRIPTION**

- A. The Work covered by this Specification includes furnishing, delivering, and setting up of all materials, supplies, and equipment and providing all labor necessary to prepare the Project Site for conducting the Work. This includes initial mobilization prior to commencing Work at the Project Site and seasonal mobilization prior to the start of Work each subsequent construction season. Mobilization shall include, but is not limited to, the movement of personnel and equipment to the Project Site and the establishment of field offices, shops, storage areas, sanitary and other facilities necessary in execution of the Work.
- B. The Work covered by this Specification includes winterization activities at the end of each construction season, as well as off-season operations during the period when dredging, backfilling, and capping operations are not being performed and sediment is not being managed at the Staging Area.
- C. This Work covered by this Specification also includes the demobilization of all equipment, material and labor established during mobilization and construction activities upon completion of the Work.
- D. This Specification includes requirements for the restoration of upland areas and features removed, disturbed, damaged, or destroyed by or resulting from the performance of the Work. This Specification does not apply to the restoration of the targeted dredging and capping areas shown on the Drawings or shoreline areas that are immediately adjacent to the targeted dredging areas. Requirements for backfilling and capping are shown on the Drawings and described in Section 31 23 23 – Capping and Backfilling. Requirements for repairing, planting, and seeding shoreline areas that are disturbed by the Contractor as part of the dredging operations are shown on the Drawings and described in Section 32 92 21 – Shoreline Seeding.



- E. The Work covered by this Specification includes the decontamination and removal of the exclusion zone at the Staging Area after dredging and dredged material handling operations are complete for the Project.

#### 1.04 SUBMITTALS

The following submittals shall be submitted in accordance with Section 01 33 00 – Submittal Procedures.

- A. Mobilization Plan: For each construction season, the Contractor shall submit an annual Mobilization Plan to the Construction Manager for review and approval. The Mobilization Plan shall be updated each year to include details for the Work planned for the upcoming construction season. At a minimum, each Mobilization Plan shall include the following items:
1. Mobilization schedule, including a detailed description of when and how materials, supplies, equipment, and personnel will be mobilized to the Project Site to meet the requirements of the Work.
  2. Detailed list of all materials, supplies, and equipment to be mobilized to the Project Site. For each piece of equipment, provide a description of how it will be mobilized to the Project Site. If the in-river equipment will be mobilized from land, provide the means and location where the equipment will be placed into the river and what assembly will be required.
  3. Drawings showing the locations of the field offices at the Staging Area. Provide details of each field office including size and layout. See Section 01 50 00 – Temporary Facilities and Controls for additional information.
  4. Drawings identifying and showing any additional land required to support the Work. Describe the land use and equipment to be used or mobilized at these locations and any improvements or construction to be conducted at these locations.
  5. Methods, procedures, and equipment to be used for preparing the Staging Area for the upcoming construction season.
  6. Drawings and written descriptions of the proposed locations of temporary in-river moorings/anchorages and docks that will be installed by the Contractor to support the Work. Describe the methods, procedures, and equipment to be used for installation and removal of the in-river moorings/anchorages and temporary docks. See Section 01 50 00 – Temporary Facilities and Controls for additional information.
- B. Winterization Plan: For each construction season, the Contractor shall submit an annual Winterization Plan to the Construction Manager for review and approval. At a minimum, each Winterization Plan shall include the following items:
1. Schedule for completing the winterization activities, including a detailed description of when and how work areas and equipment will be winterized at the end of the construction season.
  2. Procedures for shutting down operations at the Staging Area for the off-season (i.e., after processing of dredged sediments is completed for the season).
  3. Procedures for winterization and storage of tugs, scows, barges, on-river equipment, docks, piping, pumps, process equipment, instruments, control systems, and any other equipment requiring winterization.

4. Procedures for winterization of the water pretreatment system and the transfer line to Arconic's Outfall 005 Impoundment in accordance with Section 02 72 00 – Water Pretreatment.
  5. A list of equipment and materials that will remain at the Project Site during the off-season. Provide a drawing showing the proposed staging locations.
  6. Procedures for off-season operations at the Staging Area, including the management of stormwater and maintaining Project Site security and access.
- C. Sediment Processing Area Decommissioning Plan: The Contractor shall prepare and submit a Sediment Processing Area Decommissioning Plan to the Construction Manager for review and approval in accordance with Section 01 33 00 – Submittal Procedures. The Sediment Processing Area Decommissioning Plan shall describe the Contractor's proposed measures for decontaminating and removing the exclusion zone at the Staging Area after all dredging and sediment handling activities are completed. At a minimum, the Sediment Processing Area Decommissioning Plan shall include, but not be limited to, the following:
1. A description of the methods and steps to be taken for decontaminating and demobilization all surfaces, equipment, structures, and other items within the exclusion zone (e.g., decontamination of equipment and surfaces, disposal of residual wastes, removal of equipment).
  2. A description of the means and methods for removing all equipment, materials, structures, staging areas, utilities, services, access ways, and other items within the exclusion zone.
  3. A description of and estimated quantities for each type of material that will be retained by the Contractor, decontaminated, and removed from the Project Site.
  4. Details for proposed reconstruction of the disturbed area to support the Contractor's continued use of the Staging Area as part of the remaining Work. Details shall include a regrading plan and surface restoration details. At a minimum, the Contractor's plan shall include activities and measures to stabilize the disturbed areas and provide necessary stormwater management.
  5. A demobilization schedule, including a detailed description of when and how materials, supplies, equipment, and personnel will be demobilized from the Project Site.
- D. Demobilization Plan: For each construction season, the Contractor shall submit an annual Demobilization Plan to the Construction Manager for review and approval. At a minimum, each annual Demobilization Plan shall include the following items:
1. A description of the means, methods, and steps to be taken for removing materials, structures, temporary utilities, temporary construction, and staging areas.
  2. Identification of the equipment and materials planned for offsite disposal separate from items identified for transport and disposal to the Secure Landfill (SLF). For items requiring offsite disposal, the Contractor shall provide the proposed disposal facility, documentation that the disposal facility is compliant with its operating permits, and the method for transport to the disposal facility.
- E. Restoration Plan: For each construction season, the Contractor shall submit an annual Restoration Plan to the Construction Manager for review and approval. At a minimum, each annual Restoration Plan shall include the following items:

1. A plan for restoration of work areas affected during that season's construction activities. This may include shoreline areas, access points, additional staging areas, among others. The Contractor shall coordinate and identify those locations requiring restoration on an annual basis with the Construction Manager. At a minimum, the restoration plan shall include, the following items:
    - a. Scaled drawings that depict the locations for restoration and the materials to be used.
    - b. Specifications for materials proposed for use during the restoration.
    - c. A list of all plants that will be planted, including the locations, species, and sizes of each item (if applicable).
    - d. Product datasheets for any proposed seed mix to be used, including the locations for seeding.
    - e. Certificates from seed vendors for any seed mixtures proposed.
    - f. Product datasheets for any fertilizers proposed.
    - g. Test reports, certifications, and mix designs for all materials to be incorporated into the restoration work.
  2. A restoration schedule, including a detailed description of when and how areas will be restored at the Project Site.
- F. The Contractor shall submit an annual Demobilization Documentation Report to the Construction Manager documenting the removal of personnel, equipment, materials, and supplies from the Project Site.
- G. The Contractor shall submit Record Drawings detailing how the Staging Area was restored, including the locations, types, material quantities, and extents of all restoration and the grades of the restored areas.

## **PART 2 – PRODUCTS (NOT USED)**

## **PART 3 – EXECUTION**

### **3.01 MOBILIZATION**

- A. Mobilization shall not begin until the Construction Manager provides written notice to proceed.
- B. The Contractor shall mobilize equipment, materials, and labor to the Project Site in accordance with the Contractor's approved Mobilization Plan once notice has been provided by the Construction Manager.
- C. The Contractor shall prepare the Project Site including, but not limited to, the following actions to the extent necessary to conduct the Work: conducting a pre-construction survey; preparing Project Site surfaces; connecting to provided utility connections or installation of additional utilities; establishing security measures; implementing dust and erosion control; and constructing storage and maintenance areas.
- D. The Contractor shall establish offices/trailers, shops, temporary power, communications, sanitary facilities, and other facilities as necessary to conduct the Work.

- E. The Contractor shall install docks and access ways at the beginning of each construction season in accordance with Section 01 50 00 – Temporary Facilities and Controls.
- F. The Contractor shall prepare the Staging Area for the upcoming construction season's activities.
- G. The Contractor shall establish temporary in-river moorings or anchorages, as necessary, to allow in-river assembly or anchorage of vessels.
- H. The Contractor shall provide access and coordination for the Company, the Construction Manager, monitoring personnel representing the Company, and the U.S. Environmental Protection Agency's oversight personnel for the general and joint use of the Staging Area, to establish offices at the Staging Area, and to launch in-river vessels and equipment. The Contractor shall work with the Construction Manager to coordinate access by others.
- I. The Contractor shall reassemble, reconfigure, re-activate, and test equipment, pumps, buried water transfer lines, and systems that were winterized the previous construction season.
- J. The Contractor shall perform seasonal startup, operation, testing, and maintenance as necessary to complete the required Work.

### 3.02 WINTERIZATION

- A. The Contractor shall perform winterization in accordance with the Contractor's approved Winterization Plan.
- B. Any material or equipment to be stored on site during the offseason must be approved by the Construction Manager and properly secured, covered, or contained to withstand the winter conditions. It is the Contractor's responsibility to maintain the security of their equipment during the winter months when construction is not occurring. There will be no claim to the Company for any damage or other loss that occurs to equipment.
- C. The Contractor is required to remove all equipment from the River during annual winterization and prior to annual demobilization. The Contractor may elect to store/stage equipment at the Staging Area during the offseason with prior written approval from the Construction Manager.
- D. At the end of each construction season, the Contractor shall remove, winterize, and store the temporary dock system components at the Staging Area or other location approved by the Construction Manager.
- E. At the end of each dredging season, the Contractor shall remove sediment from, clean, and decontaminate dredged material transport scows prior to storage. Scows shall be decontaminated by the Contractor in accordance with Section 01 72 00 – Decontamination of Equipment. No visible sediment, debris, or residue shall remain in the scows. The Contractor shall notify the Construction Manager to perform a final inspection of the scows.
- F. After sediment handling is completed for the season and the dredged material and debris have been transported to the landfill, all Project Site roadways, access routes, and the exclusion zone areas at the Staging Area shall be cleaned. Cleaning shall include sweeping and scraping surfaces and drainage corridors (including walls and barriers), washing the areas with high-pressure water, and other methods to remove and collect accumulated solids. The cleaned areas shall be visibly free of sediment and loose solids as determined by the Construction Manager. The Contractor shall notify the Construction Manager to perform an inspection of the Staging Area after cleaning.

- G. Decontamination water resulting from cleaning activities will be tested and transferred to the water pretreatment system for subsequent treatment in accordance with Section 02 72 00 – Water Pretreatment. Solids generated during the cleaning activities shall be collected and transported to the SLF in accordance with Section 02 81 02 – Transportation and Disposal of Waste Material.
- H. The Contractor shall decontaminate all personnel, equipment, structures, and non-disposable materials that have come in contact with dredged materials. Decontamination shall be performed in accordance with Section 01 72 00 – Decontamination of Equipment.
- I. After the Construction Manager's inspection of the cleaning, the Contractor shall flush the exclusion zone asphalt and concrete surfaces with approximately 20,000 gallons of potable water and collect the wash water in the sumps. The wash water shall be transferred to a tank for sampling. The Construction Manager will then collect a sample of the accumulated water for polychlorinated biphenyls (PCB) and total suspended solids (TSS) analyses. If the PCB and TSS results are less than the maximum effluent concentration of 3 micrograms per liter ( $\mu\text{g/L}$ ) PCB and 20 milligrams per liter ( $\text{mg/L}$ ) TSS as required by Section 02 72 00 – Water Pretreatment, decontamination will be considered complete, and the area will be allowed to operate throughout the winter period through direction of surface water runoff to the Outfall 005 Impoundment without water pretreatment. If the post-decontamination sampling results exceed the maximum effluent concentrations of 3  $\mu\text{g/L}$  PCB or 20  $\text{mg/L}$  TSS, additional decontamination of the exclusion zone shall be performed by the Contractor until the above-referenced decontamination criteria are achieved. The Contractor shall continue to operate the water pretreatment system in accordance with Section 02 72 00 – Water Pretreatment until the Construction Manager provides written approval that decontamination is complete.
- J. The Construction Manager will periodically collect samples of stored water prior to transfer to the Outfall 005 Impoundment. The Contractor shall not transfer any water to the Outfall 005 Impoundment during the winter shutdown period without prior written authorization from the Construction Manager.
- K. The Contractor shall winterize the Staging Area in accordance with the approved Winterization Plan to prevent failures and breakage during the winter months when active construction activities are not being performed.
- L. All process equipment, piping, instruments, and systems not associated with the stormwater collection system shall be drained of all liquid and cleaned.
- M. All pumps not in operation during the winter shall be drained to ensure the pump casing is protected.
- N. Water traps on air lines shall be drained.
- O. Any overstock chemicals and materials (e.g., polymer, stabilization amendments) shall be adequately containerized and removed from the Project Site or securely stored at an appropriate location in accordance with manufacturer recommendations, the Environmental Protection Plan, and the Spill Prevention, Control, and Countermeasures Plan, if required, in accordance with Section 01 35 43 – Environmental Protection.
- P. The Contractor shall remove bulk solids from tanks and flush the inside with water to remove the solids.
- Q. The Contractor shall lockout/tagout any source of energy not required for off-season operations.

- R. The Contractor shall perform winterization procedures as recommended by equipment manufacturers.
- S. The Contractor shall add desiccant to electrical panels, unless a heater is operated.
- T. The Contractor shall change oil in gear boxes and spray chains with protective lubricant.

### 3.03 OFF-SEASON OPERATIONS

- A. The Contractor shall maintain access and security at the Staging Area during the offseason period.
- B. The Contractor shall provide snowplowing of the Staging Area roads and parking areas as required to maintain safe access for off-season operations. Only sand shall be used on the roadways during periods of ice or snow. Deicers shall not be allowed.
- C. The Contractor shall maintain the stormwater collection system and collect, test, and convey stormwater that contacts the exclusion zone during the offseason period in accordance with Section 02 72 00 – Water Pretreatment.

### 3.04 SEDIMENT PROCESSING AREA AND WATER PRETREATMENT PLANT DECOMMISSIONING

- A. After dredging and dredged material handling operations are complete for the Project and after approval by the Construction Manager, the Contractor shall thoroughly clean the exclusion zone at the Staging Area. Cleaning shall include sweeping, scraping, washing with high-pressure water, and other methods to remove and collect accumulated solids from all surfaces. The Contractor shall remove bulk solids from tanks and flush the inside with water to remove the solids. All process equipment, piping, instruments, and systems shall be drained of all liquid and cleaned. The cleaned areas shall be visibly free of solids as determined by the Construction Manager. The Contractor shall notify the Construction Manager to perform a final inspection after cleaning.
- B. Unless otherwise directed by the Construction Manager, the Contractor shall completely remove all items and structures established or installed within the exclusion zone at the Staging Area when no longer needed. This shall include dismantling, disconnecting, and removing all equipment, materials, structures, facilities, utilities, staging areas, access ways, control measures, and services.
- C. The Contractor shall decontaminate all personnel, equipment, structures, and non-disposable materials that have come in contact with dredged materials. Decontamination shall be performed in accordance with Section 01 72 00 - Decontamination of Equipment.
- D. Liquids generated during the cleaning activities shall be collected and properly disposed of off site or treated in accordance with Section 02 72 00 – Water Pretreatment.
- E. Solids generated during the cleaning activities shall be collected and transported to the SLF in accordance with Section 02 81 02 – Transportation and Disposal of Waste Material.
- F. After cleaning the exclusion zone surfaces, the Contractor shall remove the construction materials within the exclusion zone at the Staging Area and transport those materials to the SLF in accordance with Section 02 81 02 – Transportation and Disposal of Waste Material. These activities shall include, but are not limited to, the following:
  - 1. Removing all asphalt pavement, non-native subgrade material, geotextile, and geomembrane liner materials within the exclusion zone at the Staging Area.

2. Transporting the removed materials to the SLF for disposal or an alternate disposal location if the Contractor proposes a value-engineering approach to beneficially reuse the material that is approved by the Construction Manager.
- G. After removal of the asphalt pavement, non-native subgrade material, geotextile, and geomembrane liner materials, sampling will be performed by the Construction Manager or others under the direction of the Construction Manager to determine whether PCBs are present in the underlying soil. The Contractor shall notify the Construction Manager when the materials are ready for sampling. It is anticipated that sampling will be completed within 3 days after notice is provided by the Contractor. The Contractor shall provide the access necessary to conduct this sampling. The Construction Manager will submit the samples to a laboratory for PCB analysis. If the analytical results indicate that the soil samples contain PCBs at concentrations greater than or equal to 1 milligram per kilogram (mg/kg), the Construction Manager will direct the Contractor to perform soil removal activities to achieve this criterion. If the analytical results indicate that the soil samples contain PCBs at concentrations less than 1 mg/kg, the Construction Manager will direct the Contractor to proceed with restoring the area.
- H. The Construction Manager will notify the Contractor when the restoration activities can proceed after sampling. The Contractor shall import aggregate fill materials to restore the disturbed area to enable use of the area to support remaining backfilling and capping activities by the Contractor as part of the Work. The Contractor shall submit a plan with details of the proposed construction activities and materials for review and approval by the Construction Manager prior to the start of decommissioning. The Contractor's plan shall include activities and measures to stabilize the disturbed areas and provide necessary stormwater management, including any necessary updates to the Staging Area Stormwater Pollution Prevention Plan.

### 3.05 DEMOBILIZATION

- A. The Contractor shall demobilize equipment, materials, and labor and perform restoration in accordance with the approved Demobilization Plan.
- B. After dredging operations are complete, the Contractor shall remove all materials (solids and free water) from all dredged material transport scows and transport those materials to the SLF. Scows shall be decontaminated by the Contractor in accordance with Section 01 72 00 – Decontamination of Equipment. No visible sediment, debris, or residue shall remain in the scows. The Contractor shall notify the Construction Manager to perform a final inspection of the scows.
- C. The Contractor shall perform decontamination activities for equipment and vessels that have contacted any PCB-containing materials as needed in accordance with Section 01 72 00 – Decontamination of Equipment.
- D. Unless otherwise specified, the Contractor shall completely remove all items when no longer needed upon completion of the Work, or as directed by the Construction Manager. This shall include dismantling, disconnecting, and removing all equipment, materials, structures, facilities, utilities, staging areas, access ways, control measures, and services installed by the Contractor at the Staging Area.

### 3.06 RESTORATION

- A. Exposed soil areas shall be seeded with a grass mix approved by the Construction Manager. The Contractor is responsible for erosion control, care, and maintenance of the seeded areas until the grass has been adequately established.

- B. The Contractor shall restore, repair, or replace all surfaces, roads, gutters, curbs, culverts, structures, equipment, utilities, and other features disturbed, damaged, or destroyed at the Staging Area or at other locations during the performance of the Work prior to annual demobilization. Material types and sizes shall match the pre-construction conditions unless otherwise approved by the Construction Manager. Pre-construction surveys by the Contractor and other observations and surveys documented by the Construction Manager will serve as the basis for the pre-construction conditions.
1. All pavement and other areas surfaced with stone or gravel that are removed, disturbed, settled, or damaged by or as a result of performance of the Work shall be repaired or replaced with material to match the existing surface. The depth of pavement, stone, or gravel shall be at least equal to the existing conditions.
  2. The restored surface shall conform to the slope and grade of the surrounding conditions.
  3. Structures destroyed, damaged, or removed as a result of the Work shall be repaired to pre-construction conditions or replaced in kind with like material and size and shall be replaced at the original location and grade.
  4. Fences destroyed, damaged, or removed as a result of the Work shall be replaced in like size and material and shall be replaced at the original location.
  5. Trees, shrubs, and herbaceous vegetation removed, damaged, or destroyed as a result of the Work shall be replaced with similar species as approved by the Construction Manager.
  6. Grass areas removed, damaged, or destroyed as a result of the Work shall be resurfaced with topsoil and seeded with a grass mix approved by the Construction Manager.
- C. The Contractor shall properly dispose of excess Project materials, supplies, and work-derived waste materials.
- D. Final cleaning shall be performed upon completion of the Work. All excess materials, soil, debris, and equipment shall be removed from the Project Site.
- E. The Contractor shall submit Record Drawings detailing how the Staging Area was restored, including the locations, types, material quantities, and extents of all restoration and the grades of the restored areas.

**- END OF SECTION -**



**SECTION 01 72 00**

**DECONTAMINATION OF EQUIPMENT**

**PART 1 – GENERAL**

**1.01 REFERENCED SECTIONS**

- A. Section 01 33 00 – Submittal Procedures
- B. Section 01 35 29 – Health, Safety, and Emergency Response Procedures
- C. Section 02 72 00 – Water Pretreatment
- D. Section 02 81 02 – Transportation and Disposal of Waste Material

**1.02 REFERENCES**

- A. 40 Code of Federal Regulations (CFR) 761.79

**1.03 DESCRIPTION**

- A. The Contractor shall provide all supervision, labor, materials, tools, equipment, accessories, and appurtenances necessary to decontaminate all the Contractor's vehicles, vessels, tools, and equipment (herein collectively referred to as equipment) that comes in contact with polychlorinated biphenyl (PCB)-containing materials. Work includes decontaminating equipment, tracking and reporting equipment decontamination status, transporting of decontamination waste, and final treatment and disposal of all decontamination waste.
- B. Personnel decontamination procedures shall be addressed in the Contractor's Health and Safety Plan to be prepared in accordance with Specification Section 01 35 29 – Health, Safety, and Emergency Response Procedures.

**1.04 SUBMITTALS**

The following shall be submitted in accordance with Section 01 33 00 – Submittal Procedures.

**A. Pre-Construction**

- 1. The Contractor shall submit a Project-specific Equipment Decontamination Plan to the Construction Manager for review and approval in accordance with Section 01 33 00 – Submittal Procedures. At a minimum, the Equipment Decontamination Plan shall include the following information:
  - a. A description of the decontamination procedures and equipment to be used to decontaminate the equipment, including:
    - 1) Procedures to inspect, test, and document decontamination, including sampling and analytical chemistry methods and frequencies.
    - 2) Procedures, materials, and equipment to remove PCB-containing sediment from the equipment that complies with the regulatory standards in 40 CFR 761.79.

- 3) Management of any waste, in accordance with applicable federal, state, and local laws, generated by the sampling and decontamination activities.
- b. A description of the location(s) where equipment decontamination will be conducted, including materials of construction and methods for containment and collection of decontamination fluids. The Contractor shall provide a plan (drawn to scale) showing the proposed layout of equipment decontamination stations, relative to dredged material handling areas and the temporary water treatment system, along with construction details for equipment decontamination stations and collection of decontamination fluids.
- c. A list of all equipment and vessels that are expected to come in contact with PCB-containing materials.
- d. A description of methods to track and report the daily decontamination status of all equipment.
- e. Documentation that equipment being mobilized to the Project Site does not contain PCBs.

B. During Construction

1. Daily Activities Report. In accordance with Section 01 31 00 – Project Management and Coordination, the Contractor shall include a Decontamination Status Report as part of the Daily Activities Report documenting all equipment and vessels that have undergone decontamination procedures. At a minimum, the Decontamination Status Report shall include the following:
  - a. A description of the decontamination status for each vessel, including whether it has come in contact with PCB-containing materials.
  - b. Whether the status of a vessel has changed from transporting PCB-containing materials to non-PCB containing materials.
  - c. Results of any decontamination testing.
2. Equipment Decontamination Documentation Report. The Contractor shall submit an Equipment Decontamination Documentation Report and certification to the Construction Manager for approval prior to the demobilization of any equipment that has contacted PCB-containing materials. The Equipment Decontamination Documentation Report shall include a description of decontamination procedures and the results of inspection and testing. The Contractor shall certify that all equipment being demobilized from the Project Site has been decontaminated in accordance with all applicable federal and state regulations and the approved Equipment Decontamination Plan.
3. The Contractor shall identify all materials and equipment planned for disposal as a result of decontamination activities. The Contractor shall provide written documentation providing a list of all materials and equipment including planned disposal locations to the Construction Manager for review and approval.

## **PART 2 – PRODUCTS (NOT USED)**

## **PART 3 – EXECUTION**

### **3.01 DECONTAMINATION REQUIREMENTS**

- A. All equipment that comes in contact with PCB-containing material shall be decontaminated by the Contractor prior to handling clean materials or prior to demobilization from the Project Site.
- B. The Contractor shall decontaminate equipment in accordance with applicable federal and state regulations and the procedures described below, as well as in the Contractor's approved Equipment Decontamination Plan, before being used with non-PCB-containing materials or demobilization from the Project Site.
- C. All vehicles requiring decontamination shall be washed sufficiently to remove all visible sediment from the vehicle body, undercarriage, and tires. The Contractor shall ensure no visible tracking of sediment onto roadways occurs, as visually confirmed by the Construction Manager.
- D. The decontamination standard for equipment that will remain on site and be dedicated to future potential Project use and may be used for other operations (such as backfilling or capping) is the removal of all visible sediment on the surface of the equipment to be confirmed by the Construction Manager or designee. Initially, equipment that is decontaminated prior to future potential Project use (such as backfilling or capping) shall be subject to wipe testing to provide evidence of the effectiveness of decontamination procedures. The results of this initial wipe testing must show that equipment surfaces contain PCBs at concentrations less than 10 micrograms per 100 cm<sup>2</sup>. Wipe sampling and testing shall be performed in accordance with the procedures and methods described in Part 3.01.E. If this initial testing verifies that decontamination procedures were effective (i.e., less than 10 micrograms per 100 cm<sup>2</sup>), future decontamination of equipment that will remain on site and be dedicated to future potential Project use will be confirmed by visual inspection that all visible sediment on the surface of the equipment has been removed. If this initial testing indicates that decontamination procedures were not effective, the Contractor shall adjust its decontamination procedures and conduct additional wipe testing to demonstrate effective decontamination.
- E. The decontamination standard for equipment that will no longer be used on the Project is the removal of visible material and power-washing of surfaces so the cleaned surface can be wipe-tested to show that equipment surfaces contain PCBs at concentrations less than 10 micrograms per 100 cm<sup>2</sup>. Wipe samples shall be collected using a hexane-soaked gauze pad provided by an approved analytical laboratory following U.S. Environmental Protection Agency's (EPA's) standard wipe test methodology (i.e., using a 10-centimeter by 10-centimeter template and wiping the surface with the gauze pad while applying uniform pressure from left to right and then top to bottom within the template). The wipe samples shall be submitted to an approved analytical laboratory for analysis for PCBs in accordance with EPA SW-846 Method 8082.

### **3.02 DECONTAMINATION PROCEDURES**

- A. The decontamination process shall be performed in such a manner that all water used and sediment removed during decontamination is captured and transferred to the temporary water treatment system, as described in Section 02 72 00 – Water Pretreatment or disposed of in accordance with all applicable laws and regulations.
- B. Sediment and decontamination water captured shall be removed as operationally necessary, or as required by the Construction Manager.

- C. Wheel-wash stations shall be washed down at the completion of each day of Work.
- D. The equipment decontamination procedure shall, at a minimum, include the following actions:
  - 1. Decontaminate equipment at locations approved by the Construction Manager.
    - a. The equipment decontamination location(s) shall be established to adequately decontaminate the necessary equipment in a timely manner and adequately collect and contain any decontamination fluids generated.
    - b. Where appropriate, the preferred location for equipment decontamination is inside hopper barges or on a deck barge that has raised sealed edges, which will allow decontamination to be performed inside the barge using the walls and floor as containment of decontamination fluids and solids. All wash water generated during decontamination procedures must be fully contained and managed.
    - c. Equipment such as tools, excavator buckets, and sheetpile sections may be lowered into hopper barges for decontamination.
    - d. Smaller cleaned equipment shall be staged on land in a designated area for final decontamination verification.
  - 2. Remove remaining sediment from equipment surfaces using shovels, brooms, and other hand tools as necessary.
  - 3. Wash equipment surfaces using pressure washers and related supplies (e.g., equipment for scrubbing and plastic sheeting), where appropriate, to remove any additional sediment that may remain.
  - 4. Visually inspect equipment surfaces to verify the removal of all visible sediment.
  - 5. Collect wipe samples (as required) from equipment surfaces to verify proper decontamination.
  - 6. Re-clean and re-test equipment if proper decontamination is not achieved.
  - 7. Collect and transport all decontamination-related solids and personal protective equipment (PPE) to Arconic's Secure Landfill (SLF) for disposal in accordance with Section 02 81 02 – Transportation and Disposal of Waste Material.
  - 8. Collect and convey all decontamination-related liquids to the temporary water treatment system for proper treatment in accordance with Section 02 72 00 – Water Pretreatment.
  - 9. Maintain a daily log for equipment designated for dredging versus backfilling and capping. Equipment shall be appropriately marked as designated for dredging or backfilling and capping to prevent the potential for cross-contamination.
  - 10. Submit a Decontamination Status Report to the Construction Manager daily documenting the status of equipment that will be used for continued operation.
  - 11. Submit an Equipment Decontamination Documentation Report to the Construction Manager to certify decontamination has been completed on all equipment before it is demobilized.

- E. Surfactants shall not be used to decontaminate equipment.
- F. Decontamination of in-river equipment transporting dredged material to the unloading area is not required during dredging operations, except for the removal of visible sediment and debris from the outside of barges.
- G. Decontamination of equipment is required for a barge before it is used to transport non-PCB-containing materials, including aggregates to be used for backfilling and capping.

3.03 DISPOSAL OF DECONTAMINATION RESIDUES AND FLUIDS

- A. Sediment and decontamination fluids shall not be disposed of in the Grasse River, other watercourses, or storm sewers.
- B. All decontamination fluids shall be managed as wastewater under Section 02 72 00 – Water Pretreatment and Section 02 61 00 – Transportation and Disposal of Waste Material.
- C. Management and disposal at the SLF or an Company-approved disposal facility of wastes generated through the course of decontaminating Project vessels and equipment will be the responsibility of the Contractor.
- D. The Contractor shall transport all decontamination waste, including, but not limited to, residual sediments, wash water, and PPE to the Staging Area for handling, treatment, and disposal.
- E. Used PPE shall be bagged and placed in a designated container on the vessel and delivered to the Staging Area for offloading and disposal in accordance with Section 02 81 02 – Transportation and Disposal of Waste Material.

**- END OF SECTION -**

**SECTION 01 78 00**

**PROJECT CLOSEOUT**

**PART 1 – GENERAL**

**1.01 REFERENCED SECTIONS**

- A. Section 01 33 00 – Submittal Procedures
- B. Section 01 78 39 – Project Record Documents

**1.02 REFERENCES (NOT USED)**

**1.03 SUMMARY**

- A. This Specification describes administrative and procedural requirements for Contract closeout.
- B. Closeout requirements for specific construction activities are included in the appropriate paragraphs of this Specification.

**1.04 SUBMITTALS**

The following submittals shall be submitted in accordance with Section 01 33 00 – Submittal Procedures:

- A. Notice of Substantial Completion
  - 1. The Contractor shall notify the Company and the Construction Manager in writing 5 days prior to substantial completion to request evaluation. The Company and the Construction Manager will then set up an appropriate time for evaluation.

**1.05 SUBSTANTIAL COMPLETION**

- A. When the Contractor considers the Work substantially complete, the Contractor shall submit, in writing, a notice of Substantial Completion to the Construction Manager. The notice shall, at a minimum, include the following:
  - 1. A notice that the Work is substantially complete.
  - 2. Post-Construction Record Drawings and Record Specifications and Addenda per Section 01 78 39 – Project Record Documents.
  - 3. A list of items to be completed or corrected and the associated schedule
- B. Within 5 working days after receipt of notice per Part 1.05.A, the Construction Manager will review the Work to determine the status of completion.
- C. If the Construction Manager determines the Work is not substantially complete, the Construction Manager will notify the Contractor promptly in writing, giving the reasons thereof. The Contractor shall remedy the deficiencies in the Work and send a second written notice of Substantial Completion to the Construction Manager. The Construction Manager will review the Work to determine status of completion.

- D. When the Construction Manager and the Company concur that the Work is substantially complete, the Company or the Construction Manager, on behalf of the Company, will prepare and deliver to the Contractor a Certificate of Substantial Completion accompanied by a list of items to be completed or corrected by the Contractor as a precedent to final payment.

#### 1.06 FINAL INSPECTION

- A. When the Contractor considers the Work complete, the Contractor shall submit a written Completion Certification to the Construction Manager that indicates the following:
  - 1. Drawings and Specifications have been reviewed.
  - 2. Work has been inspected for compliance with Drawings and Specifications.
  - 3. Work has been completed in accordance with Drawings and Specifications.
  - 4. Work is completed and ready for final inspection by the Construction Manager and the Company.
- B. The Construction Manager and the Company will review the Work to verify the status of completion with reasonable promptness after receipt of such certification.
- C. Should the Construction Manager or the Company consider the Work to be incomplete or defective, the following must occur:
  - 1. The Construction Manager will notify the Contractor promptly in writing, listing the incomplete or defective Work.
  - 2. The Contractor shall take immediate steps to remedy the stated deficiencies and send a second written Completion Certification to the Construction Manager that the Work is complete.
  - 3. The Construction Manager will review the Work.
- D. When the Construction Manager and the Company find that the Work is acceptable under the terms of the Contract, the Construction Manager will request that the Contractor complete closeout submittals.

#### 1.07 THE CONTRACTOR'S CLOSEOUT SUBMITTALS

- A. The Contractor shall provide closeout submittals to the Construction Manager within 7 calendar days of receiving the request from the Construction Manager to complete closeout submittals, unless otherwise agreed to by the Construction Manager.
- B. The following documentation shall be provided in the closeout submittals to the Construction Manager:
  - 1. Evidence of compliance with requirements of governing authorities.
  - 2. Final Post-Construction Record Drawings, Final Record Specifications and Addenda, and other Final Project Records (per Section 01 78 39 – Project Record Documents).
  - 3. Evidence of payment and release of liens in connection with the requirements of the Contract.

1.08 FINAL APPLICATION FOR PAYMENT

- A. The Contractor shall submit the Final Application for Payment in accordance with procedures and requirements stated in the Contract.
- B. The Company or the Construction Manager, on behalf of the Company, will issue a Certificate of Completion to the Contractor at the completion of the Project after receipt of all required maintenance instructions, schedules, Record Drawings, guarantees, bonds, insurance certificates, and releases of liens. The date of the Certificate of Completion shall be the beginning date of all guarantees.

**PART 2 – PRODUCTS (NOT USED)**

**PART 3 – EXECUTION (NOT USED)**

**- END OF SECTION -**



**SECTION 01 78 39**

**PROJECT RECORD DOCUMENTS**

**PART 1 – GENERAL**

**1.01 REFERENCED SECTIONS**

- A. Section 01 33 00 – Submittal Procedures
- B. Section 01 78 00 – Project Closeout
- C. Section 02 21 00 – Surveys

**1.02 REFERENCES (NOT USED)**

**1.03 SUMMARY**

- A. The Contractor shall provide supervision and labor to provide accurate Project Record Documents for the Work and all additions, substitutions of material, variations in Work, and any other additions or revisions to the Contract.
- B. This Specification includes administrative and procedural requirements for Project Record Documents, including the following:
  - 1. Survey Record Drawings
  - 2. Post-Construction Record Drawings
  - 3. Project Records
  - 4. Record Specifications and Addenda
- C. See individual Specifications for specific requirements for Project Record Documents of the Work specified.

**1.04 SUBMITTALS**

The following submittals shall be submitted in accordance with Section 01 33 00 – Submittal Procedures:

- A. Survey Record Drawings. The Contractor shall provide Survey Record Drawings as described in Section 02 21 00 – Surveys.
  - 1. All Survey Record Drawings shall be stamped and signed by the professional responsible for the survey work.
  - 2. A hard copy of the Survey Record Drawings shall be submitted.
  - 3. An electronic copy of the Survey Record Drawings shall be submitted via an electronic format acceptable to the Construction Manager. Electronic versions of Survey Record Drawings shall be in AutoCAD Civil 3D (2014 or later) format or another program format approved by the Construction Manager.

- B. Post-Construction Record Drawings. The Contractor shall prepare and submit a complete set of Post-Construction Record Drawings at the time of Substantial Completion as described in Section 01 78 00 – Project Closeout.
1. The Construction Manager will provide a set of the Final Design Drawings electronically for Contractor use in preparing Post-Construction Record Drawings.
  2. The Contractor shall record all variations to the Drawings as described herein.
  3. When the Contractor considers Work to be Substantially Complete, the Contractor shall submit Post-Construction Record Drawings, with all deviations from the Drawings clearly marked for the Construction Manager's review in accordance with Section 01 78 00 – Project Closeout.
    - a. Post-Construction Record Drawings shall use the coordinate systems shown on the original Drawings.
    - b. Post-Construction Record Drawings shall be at a scale no smaller than that shown on the original Drawings.
    - c. A hard copy of the Post-Construction Record Drawings shall be submitted.
    - d. An electronic copy of the Post-Construction Record Drawings shall be submitted via an electronic format acceptable to the Construction Manager. Electronic versions of Post-Construction Record Drawings shall be in AutoCAD Civil 3D (2014 or later) format or another program approved by Construction Manager. AutoCAD information shall be organized into separate electronic files that correspond to each sheet of the Drawings. Each file shall be named with the sheet identification and clearly designated as a Project Record Drawing as described herein.
  4. Upon receipt of request for closeout submittals from the Construction Manager, the Contractor shall submit a final set of Post-Construction Record Drawings in electronic format to the Construction Manager.
- C. Project Records. The Contractor shall provide Project Records as listed in Attachment A of Section 01 33 00 – Submittal Procedures and described in the individual Specification sections. Examples of Project Records include, but are not limited to, photographs, survey information, and installation records.
- D. Record Specifications and Addenda. The Contractor shall submit one copy of Record Specifications, including addenda and Contract modifications at the time of Substantial Completion, as described in Section 01 78 00 – Project Closeout.

## **PART 2 – PRODUCTS (NOT USED)**

## **PART 3 – EXECUTION**

### **3.01 MAINTENANCE OF DOCUMENTS**

- A. The Contractor shall maintain at the Project Site a minimum of one copy of each of the following:
1. Drawings

2. Specifications
  3. Addenda
  4. Permits
  5. Contractor's Health and Safety Plan
  6. Reviewed shop drawings and submittals
  7. Change Orders
  8. Any other modifications to the Contract
  9. Field orders or written instructions from Construction Manager
  10. Field Test Reports
  11. Bills of lading or equivalent documentation
  12. Material delivery receipts and tickets
- B. The Contractor shall maintain all documents in the Contractor's field office apart from documents used for construction.
- C. The Contractor shall maintain all documents in clean, dry, legible condition.
- D. Project Record Documents shall not be used for construction purposes.
- E. The Contractor shall make all documents available at all times for inspection by the Construction Manager.

### 3.02 RECORDING

- A. The Contractor shall identify and date each Project Record Document, including the designation "PROJECT RECORD DOCUMENT," in a prominent location.
- B. The Contractor shall keep record documents current.
1. The Contractor shall make changes and modifications to Project Record Documents as they occur and not wait until the end of the Project.
  2. The Contractor shall not permanently conceal or cover any installed Project components until the required information has been obtained and recorded.
  3. The Contractor shall give particular attention to concealed elements that would be difficult to measure and record at a later date.
  4. The Contractor shall use the electronic Drawing files provided by the Construction Manager to prepare changes and additions to the Post-Construction Record Drawings. New drawings added to the original set of Drawings shall be prepared in the same format used to create the original Drawing files.

- C. Survey Record Drawings. Information required for inclusion on the Survey Record Drawings is defined in Section 02 21 00 – Surveys.
- D. Post-Construction Record Drawings. The Contractor shall legibly mark Post-Construction Record Drawings to record actual construction where construction varies from that shown on the original Drawings, including, but not limited to, the following:
  - 1. Details not on the original Drawings
  - 2. Field changes of dimension and detail
  - 3. Use of alternate materials and equipment
  - 4. Connection and transition details
  - 5. Dates of areas dredged, backfilled, and capped
  - 6. Elevations of dredging, backfill, and cap placement
  - 7. Pre- and post-construction 3D-generated surfaces (by the equivalent CAD method for each pre- and post-construction surface)
  - 8. Horizontal and vertical locations of underground utilities, structures, and appurtenances
  - 9. Where submittals (e.g., shop drawings) are used, record cross-reference at corresponding locations on the Post-Construction Record Drawings
  - 10. Plots of the actual pre- and post-construction cross-sections plotted at the same stations as the original Drawing cross-sections
  - 11. Changes made by Field Order or by Change Order, noting the related Field Order or Change Order identification numbers where applicable
- E. Project Records. See individual Specifications for specific requirements for Project Records of the Work specified.
- F. Record Specifications and Addenda. The Contractor shall legibly mark up each specification section to record the following:
  - 1. Manufacturer, trade name, catalog number, and supplier of each product and item of equipment installed, including substitutions
  - 2. Changes made by Change Order or Field Order
- G. The Company or the Construction Manager may request additional Record Drawings or other documentation, in addition to those listed in Attachment A of Section 01 33 00 – Submittal Procedures, when it is deemed necessary to adequately describe the Work covered in the respective Specifications. The Contractor shall provide the additional documentation at no additional cost to the Company.

**- END OF SECTION -**

**SECTION 02 21 00**

**SURVEYS**

**PART 1 – GENERAL**

**1.01 REFERENCED SECTIONS**

- A. Section 01 31 00 – Project Management and Coordination
- B. Section 01 33 00 – Submittal Procedures
- C. Section 01 78 00 – Project Closeout
- D. Section 01 78 39 – Project Record Documents
- E. Section 31 23 23 – Capping and Backfilling
- F. Section 35 20 23 – Dredging
- G. Section 35 44 00 – Waterway Habitat Features

**1.02 REFERENCES**

- A. U.S. Army Corps of Engineers (USACE), 2013. *Engineering and Design – Hydrographic Surveying*. EM 1110-2-1003.
- B. Geometric Geodetic Accuracy Standards and Specifications for Using GPS Relative Positioning Techniques, Federal Geodetic Control Committee, Version 5.0, May 1988 and corrected August 1, 1989.

**1.03 DESCRIPTION**

- A. The Contractor shall perform all topographic and hydrographic survey work described in the Specifications and shown on the Drawings, and shall furnish all labor, equipment, materials, and incidentals necessary to perform and document the surveys.
- B. At the start of each construction season, the Contractor shall perform a Debris Survey for areas planned for dredging that season.
- C. The Contractor shall perform Pre-Construction and Post-Construction Conditions Surveys as described in Part 3.05 to document and provide a record of baseline conditions and identify any changes in condition that may have occurred during the Work.
- D. The Contractor shall perform surveys of dredging, backfilling, and capping activities as described in Part 3 to track progress and verify and document completion of the Work.
- E. The Contractor shall prepare Survey Record Drawings to be used for confirming quantities and documenting construction. The final Survey Record Drawings shall be certified by the Contractor's surveyors and in accordance with Section 01 78 39 – Project Record Documents.

#### 1.04 QUALIFICATIONS OF SURVEYORS

- A. Hydrographic surveys shall be performed in accordance with USACE EM 1110-2-1003 guidance. The Hydrographic Surveyor selected by the Contractor shall be a Registered Hydrographic Surveyor certified by the National Society of Professional Surveyors with qualifications acceptable to the Construction Manager. The Hydrographic Surveyor shall have actively engaged in hydrographic survey operations during the past 3 years and have a minimum of 5 years of experience in hydrographic surveying working in similar marine conditions.
- B. The Contractor shall retain the services of a Topographic Surveyor to annually confirm existing survey control points, establish any new survey control points, and survey upland features and work areas. The Topographic Surveyor selected by the Contractor shall be a licensed State of New York Professional Land Surveyor with qualifications acceptable to the Construction Manager. The Topographic Surveyor shall have actively engaged in land survey operations during the past 3 years and have a minimum of 5 years of experience in land surveying under license.
- C. The qualifications of the surveyors (Topographic Surveyor and Hydrographic Surveyor) shall be submitted in the Survey Work Plan outlined herein. The Construction Manager reserves the right to disallow the person(s) proposed by the Contractor for surveying. If, in the Construction Manager's opinion, the person is not qualified to do the work, the Contractor shall select another surveyor and submit qualifications until a qualified person is approved. Use of alternative surveyors shall be at no additional cost to the Company.

#### 1.05 SUBMITTALS

The following submittals shall be in accordance with Section 01 33 00 – Submittal Procedures:

##### A. Pre-Construction

- 1. Survey Work Plan. The Contractor shall submit a Survey Work Plan to the Construction Manager for review. Work shall not commence until the Survey Work Plan is approved by the Construction Manager. At a minimum, the Survey Work Plan shall include the following:
  - a. The name, address, and a summary of qualifications of the surveyor(s) selected to perform the survey work and copies of licenses and certifications as required in Part 1.04.
  - b. A list of all required surveying tasks and areas to be surveyed for horizontal limits and elevations, as necessary, to perform and document the Work described in the Specifications and on the Drawings.
  - c. Proposed location for installation of water surface elevation board(s) near the Staging Area.
  - d. A description of the proposed survey methods, including equipment, procedures, calibration methods, calibration frequency, and estimated precision/accuracy of measurements. The Survey Work Plan shall clearly define the method of surveying to be used for each required survey and in each area of the river and upland, with consideration of required survey accuracy and density, as described in the Specifications. This shall include:
    - 1) Multi-beam hydrographic survey methods wherever possible, unless water depths are too shallow for multi-beam hydrographic surveys.

- 2) Single-beam hydrographic survey methods where a multi-beam hydrographic survey cannot be conducted due to shallow water depths.
  - 3) Topographic survey methods for areas where a single-beam or multi-beam hydrographic survey cannot be conducted due to shallow water depths.
  - 4) Topographic survey methods for upland areas.
  - 5) Debris surveys in dredge areas.
- e. A discussion of the planned methods and frequencies for progress surveys.
  - f. A listing of the control points to be used during all survey operations and the anticipated location of a Project base station for real-time kinematic (RTK) differential global positioning system (DGPS) corrections.
  - g. Instrument specifications or cut sheets and GPS calibration certificates (6 months current) and procedures for calibration during the full period of the Work.
  - h. A description of recordkeeping procedures during surveying.
  - i. A proposed survey deliverable format, including example electronic files of survey surfaces for in-water and upland work in the format specified herein. The Construction Manager will evaluate whether the file format is acceptable for use in determining compliance with the Specifications.
2. Pre-Construction Conditions Survey. The Contractor shall submit Pre-Construction Conditions Survey documentation as required in Part 3.05, including videos, photographs, indexes, figures, and topographic survey information. Electronic copies of the Pre-Construction Conditions Survey documentation shall be submitted in an electronic format acceptable to the Construction Manager.
  3. Debris Survey. Prior to the start of dredging each construction season, the Contractor shall submit Debris Survey results to the Construction Manager. The Debris Survey submittal shall summarize the locations, types, and sizes of debris and other obstructions identified and determine whether pre-dredging debris removal is needed to facilitate dredging operations.
  4. Pre-Construction River Survey. The Contractor shall submit survey data for the Pre-Construction River Survey described in Part 3.07. The Contractor shall submit unedited survey data to the Construction Manager, as well as processed survey results containing easting, northing, and elevation data (in the form of a XYZ or .csv file) within 10 work days of data collection, or as otherwise approved by the Construction Manager. The Contractor shall also prepare and submit contour maps in Portable Document Format (PDF) and Computer-aided Design (CAD) format. The Construction Manager must approve pre-construction surveys prior to commencing construction in each area. The submittal shall be certified by the Contractor's Hydrographic Surveyor.
  5. Pre-Dredge Surveys, Pre-Excavation Surveys, Pre-Placement Cap Surveys, Pre-Placement Plot Test Area Surveys, Pre-Placement Staged Cap Surveys, and Pre-Placement Slope Grading Fill Surveys. The Contractor shall submit survey data for the required surveys in accordance with the requirements of this Specification to document pre-construction conditions in each work area prior to the start of dredging, floodplain soil removal, and cap placement. The Contractor shall submit unedited survey data to the Construction Manager, as well as processed survey results containing easting, northing,

and elevation data (in the form of a XYZ or .csv file) within 10 work days of data collection, or as otherwise approved by the Construction Manager. The Contractor shall also prepare and submit contour maps in Portable Document Format (PDF) and Computer Aided Design and Drafting (CAD) format. The Construction Manager must approve pre-construction surveys prior to commencing construction in each area. The submittal shall be certified by the Contractor's Hydrographic Surveyor or Topographic Surveyor, as applicable.

6. The Contractor's Topographic Surveyor shall submit a letter certifying the survey control points are located as required by the Contract. If the Contractor's surveyor determines the survey control points are not located as required by the Contract, the Contractor shall notify the Construction Manager immediately and provide documentation prepared by the surveyor(s) describing and illustrating the inconsistencies with the Contract.

B. During Construction

1. Utility Surveys. The Contractor shall submit Utility Surveys as required by Part 3.04.
2. Progress Surveys. The Contractor shall submit progress survey data to the Construction Manager as required in the Specifications and as requested by the Construction Manager. Progress survey submittals shall include unedited survey data, processed survey contour maps, and survey data containing easting, northing, and elevation data, in the form of a XYZ or .csv file, with any request for progress payment or as requested by the Construction Manager.
3. Verification Surveys (Post-Dredge Surveys, Post-Backfill Placement Surveys, Post-Excavation Surveys, Post-Placement Cap Surveys, Post-Placement Plot Test Area Surveys, Post-Placement Staged Cap Surveys, and Post-Placement Slope Grading Fill Surveys). The Contractor shall submit verification survey data (combined hydrographic and topographic data, as applicable) and quantity calculations in accordance with the requirements of this Specification to verify the completion of dredging, floodplain soil removal, backfill placement, each layer of cap placement, and placement of habitat features. The Contractor shall submit unedited survey data to the Construction Manager, as well as processed survey results (containing easting, northing, and elevation data in the form of a XYZ or .csv file) within 2 work days of data collection. As applicable, the Contractor shall also prepare and submit contour maps and Isopach comparison maps in PDF and CAD format.
4. Daily Activities Report. The Contractor shall submit a daily visual presentation of dredging, backfilling, and cap layer placement progress, including plots showing the dredging and backfill placement progress in each Dredge Management Unit (DMU) and cap placement progress in each Cap Certification Unit (CCU) as part of the Daily Activities Report described in Section 01 31 00 – Project Management and Coordination, Section 35 20 23 – Dredging, and Section 31 23 23 – Capping and Backfilling.
5. The Contractor shall submit, on request of the Construction Manager, documentation of accuracy of survey work, survey logs, and survey field notes.

C. Post-Construction

1. Survey Record Drawings. The Contractor shall submit combined hydrographic and topographic plans as part of Survey Record Drawings to the Construction Manager in accordance with Section 01 78 39 – Project Record Documents. The Survey Record Drawings shall be certified by the Contractor's Hydrographic Surveyor or Topographic Surveyor, as applicable. At a minimum, Survey Record Drawings shall document the following:



- a. Pre-dredging, post-dredging, and post-backfill placement conditions (e.g., dredge areas designed as clay or Hard Bottom, backfill types, and seeded areas) and elevations for each DMU and access dredging area.
  - b. Pre-construction and post-construction conditions (e.g., cap types) and elevations for each cap layer in each CCU.
  - c. Pre-excavation, post-excavation, and post-backfill placement conditions and elevations for each floodplain removal area.
  - d. Pre-excavation, post-excavation, and post-backfill placement conditions and elevations at the Stanton Road sheetpile area.
  - e. Placement locations for anchored rootwads and rock clusters.
  - f. Post-project conditions and elevations of in-water loading and unloading areas adjacent to the Staging Area (and any other material loading or unloading locations).
  - g. Conditions and elevations associated with decommissioning of the Sediment Processing Area at the Staging Area.
  - h. Topographic conditions at the Staging Area at the completion of the Project.
  - i. Surveyed horizontal and vertical control points used during the course of the Work.
2. Post-Construction Conditions Survey. The Contractor shall submit Post-Construction Conditions Survey documentation as required in Part 3.05, including videos, photographs, indexes, drawings, and topographic survey information. The Post-Construction Conditions Survey shall consist of the same elements as the Pre-Construction Conditions Survey and shall also note any discrepancies from the Pre-Construction Conditions Survey. Electronic copies of the Post-Construction Conditions Survey documentation shall be submitted in an electronic format acceptable to the Construction Manager.
  3. The Contractor shall submit to the Construction Manager, at the completion of each construction season, all survey logs and field notes developed during construction.

#### 1.06 PROJECT DATUMS

- A. All topographic and hydrographic surveys shall be prepared using the Project datums listed in these Specifications and as shown on the Drawings:
  1. Horizontal Datum: New York State Plane Coordinate System of 1983, East Zone (FIPS 3101), North American Datum 1983, 1997 adjustment [NAD 83(97)], U.S. Survey Feet.
  2. Vertical Datum: United States Lake Survey of 1935 (USLS35), U.S. Survey Feet.

#### 1.07 SURVEY REFERENCE POINTS

- A. Existing control point monuments (horizontal and vertical control) for the Project are shown on the Drawings.
- B. The Contractor shall locate and protect control point monuments and established control points prior to starting the Work and preserve all permanent reference points during construction.

1. The Contractor shall not make changes or relocations without prior written notice to the Construction Manager and after obtaining approval.
  2. The Contractor shall report to the Construction Manager when any reference point is lost, destroyed, or requires relocation because of necessary changes in grades or location.
  3. The Topographic Surveyor shall correctly replace Project monuments or control points that may be lost or destroyed and establish replacements based on original horizontal and vertical controls at no additional cost to the Company.
  4. At the beginning of each construction season, the Contractor's Topographic Surveyor shall confirm the existing survey control points to be used to locate the Work.
  5. The Contractor's Topographic Surveyor shall establish any new survey control points necessary to locate the Work.
- C. Prior to the start of construction, the Contractor shall install and survey water surface elevation boards near the Staging Area in accordance with the approved Survey Work Plan. Any additional water surface elevation boards, as deemed necessary, shall be installed as required by the Construction Manager for reference. The Contractor shall maintain water surface elevation boards for the duration of the Work.

## **PART 2 – PRODUCTS (NOT USED)**

## **PART 3 – EXECUTION**

### **3.01 GENERAL**

- A. The Contractor is responsible for all surveying required for layout and performance of the Work. All pre-construction, verification or progress, seasonal, and record surveys shall be performed under the direction of a surveyor meeting the qualifications described in Part 1.04. All in-river surveys (i.e., related to the dredging, backfilling, and capping operations) shall be performed under the direction of the Contractor's Hydrographic Surveyor. All surveys of upland features and Work (i.e., for upland structures, utilities, and floodplain removal area excavations) shall be performed under the direction of the Contractor's Topographic Surveyor. All construction-related drawings, submittals, and Survey Record Drawings shall be prepared in CAD and PDF formats. Where required, electronic versions shall be in AutoCAD Civil 3D (2015 or later) format or other program approved by the Construction Manager.
- B. The Contractor shall make all necessary measurements of length, depth, and area necessary to calculate quantities of the Work performed consistent with the Specifications and as shown on the Drawings. The results of these survey measurements and all relevant backup calculations shall be provided to the Construction Manager for review and approval.
- C. Survey procedures, including, but not limited to, positioning modes, calibration, data reduction, adjustment, processing, and plotting, shall conform to recognized industry standards. Horizontal location observations shall compensate for errors, geodetic corrections, and atmospheric variations. Failure to perform and process such surveys in accordance with recognized standards will result in a rejection and non-payment for work performed.
- D. The Contractor shall verify survey work using the manufacturer's calibration and field verification procedures per industry standards.

- E. The Contractor shall establish survey control, confirm control points (horizontal control and vertical benchmarks) provided in the Specifications and on the Drawings, confirm Project Site features, and certify the Work is located as required by the Contract Documents.
- F. The survey limits for a given DMU shall extend a minimum of 40 feet beyond the perimeter of the unit parallel to the shoreline and 20 feet beyond the perimeter of the unit perpendicular to the shoreline or beyond the designated area footprint for the survey.
- G. The survey limits for a given CCU shall extend a minimum of 40 feet beyond the designated cap placement area.
- H. Topographic and hydrographic survey methods shall be used during the execution of this Specification and as appropriate based on field conditions in each work area.
- I. Multi-beam hydrographic surveys shall be conducted for all surveys, to the extent practicable. If the water depths in the near shore areas are not adequate for performing the multi-beam survey, single-beam or topographic surveys shall be conducted. The Contractor shall identify the areas where each survey method will be performed and provide the details in the Survey Work Plan to be reviewed by the Construction Manager.
- J. In areas where multi-beam hydrographic surveys cannot be conducted (i.e., where single-beam or topographic survey methods are necessary), the spacing of the measurements shall consider the local conditions on a location-by-location basis. Transect survey spacing shall not exceed 10 feet; however, the spacing shall be reduced as appropriate to collect adequate data to characterize the conditions. For instance, in a DMU or CCU with narrow width (e.g., 10 to 15 feet), at least two survey transects shall be collected across the width of the unit. Where manual survey measurements are taken along survey transects, measurements shall be collected every 2 to 5 feet along the transect line and additional measurements shall be collected as appropriate based on local conditions (e.g., areas with a steep grade or irregular bottom will require additional survey points compared to a flat or uniform bottom).
- K. Unless otherwise agreed to by the Construction Manager, the same survey method and survey measurement spacing shall be used for pre- and post-construction surveys for dredging, floodplain removal, backfilling, and capping within a given area. For instance, if a Pre-Dredge Survey is performed via multi-beam bathymetric survey methods for a given DMU, then the Post-Dredge Survey and Post-Backfill Survey of that DMU shall use the same multi-beam survey methods.
- L. Pre-construction surveys shall be performed at least 10 days, but no more than 90 days, prior to the start of construction during each season, unless otherwise approved by the Construction Manager.
- M. The Contractor shall provide access to the survey vessel(s) by the Construction Manager during all surveys.

### 3.02 PROJECT SURVEY REQUIREMENTS

- A. Topographic surveys shall meet the following additional criteria, at a minimum:
  - 1. Measure the target horizontal position to an accuracy of 0.1 foot and the target elevation to an accuracy of 0.1 foot.
  - 2. The Contractor's surveys shall provide coverage of the work area based on the size of the area to adequately characterize the surface and to subsequently calculate volumes subject

to the approval of the Construction Manager. Topographic survey spacing shall not exceed 10 feet.

3. For topographic surveys of near shore dredge and backfill areas, a minimum overlap of 10 feet is required with the hydrographic survey coverage.
- B. Hydrographic surveys shall meet the following additional, minimum criteria:
  1. Single-beam and multi-beam hydrographic surveys shall comply with the standards defined in the USACE Engineering and Design Hydrographic Surveying Manual No. 1110-2-1003 as a guideline, unless otherwise stated herein.
  2. Single-beam soundings shall be taken in consecutive cross-sections parallel and perpendicular to the river stationing established by the Drawings. Each cross-section shall consist of individual vertical elevations taken in lines parallel and perpendicular to the baseline.
  3. Transect spacing for hydrographic data collected using single-beam survey equipment shall not exceed 10 feet.
  4. All hydrographic surveys shall meet the following repeatable accuracy:
    - a. For elevation, to the nearest 0.1 foot; repeatable to the nearest 0.2 foot for the equipment used.
    - b. For horizontal distance, to  $\pm 3.0$  feet; repeatable to the nearest 1.0 foot for the equipment used.
  5. Horizontal positioning shall be by RTK DGPS or equivalent technology capable of providing the same level of positioning accuracy.
- C. The Contractor shall demonstrate the ability to achieve, monitor, and report these accuracies in the Survey Work Plan. The Contractor shall verify its error budget (i.e., quality control check of all sensors one time per day) and include it in the Daily Activities Report.
- D. The Contractor shall submit hydrographic survey data sorted to present an average elevation within each 1-foot by 1-foot grid square at the grid centroids matching the electronic Dredge Prism Files. The Contractor shall also present combined topographic and hydrographic survey data as an average elevation within each 10-foot by 10-foot grid square centroid. Survey data processing shall consider the horizontal extents of the remediation boundaries to avoid edge effects with averaging data inside and outside of the boundaries.

### 3.03 LINE AND GRADE CONTROL

- A. All Work shall be performed within the accuracy specified in the Specifications and shown on the Drawings.
- B. Temporary Working Points. The Contractor shall provide and maintain stakes, lines, benchmarks, batter boards, and other temporary working points, lines, and levels. The Contractor shall construct the temporary working points to be "permanent" during construction and remove working points, after obtaining the Construction Manager approval, when they are no longer needed.

- C. The Contractor shall not deviate from indicated lines and grades without the Construction Manager's prior approval.

#### 3.04 REQUIRED SURVEYS – UTILITIES

- A. The Contractor shall survey the locations of aboveground utilities in, or immediately adjacent to, the work area to confirm clearance with the Work.
- B. The Contractor shall survey locations of any utilities removed or capped during the Work and provide survey results to the Construction Manager within 10 days of completion of survey.
- C. The Contractor shall conduct a Post-Construction Utilities Survey to document the line and grade of any installed utilities.

#### 3.05 REQUIRED SURVEYS – PRE-CONSTRUCTION/POST-CONSTRUCTION CONDITIONS SURVEYS

- A. The Contractor shall perform a Pre-Construction Conditions Survey before commencement of the Work and a Post-Construction Conditions Survey after completion of the Work as described herein.
- B. At a minimum, Pre-Construction and Post-Construction Conditions Surveys shall be completed annually for support areas, structures, access roads, haul routes, monitoring wells, exposed utilities, and other relevant features in and adjacent to the work areas.
- C. Pre-Construction and Post-Construction Conditions Surveys shall consist of digital photographs and videos. An index of videos and photographs is required. The index must use a counter or other indexing technique. Videos must be labeled and narrated. Photographs shall be numbered. A key plan shall be provided to show the location and general direction of each photograph and video.
- D. Documentation of the Pre-Construction Conditions Survey shall include a written description of the condition of key features for each structure in and adjacent to the work areas. The documentation shall note any evident structural faults and deficiencies, or recent repairs. Inspection documentation shall include a space for the Construction Manager to initial, confirming the identified defects have been discussed.
- E. As part of the Pre-Construction and Post-Construction Conditions Surveys, the Contractor shall conduct topographic surveys of upland areas that will be disturbed during the performance of the Work. The topographic surveys shall document the elevations and contours within the work area. The survey shall also document the locations, types, and sizes of vegetation (e.g., trees and shrubs), utilities, and structures within and immediately adjacent to the work area or that may need to be altered to perform the Work.

#### 3.06 REQUIRED SURVEYS – DEBRIS SURVEY

- A. At the start of each construction season, the Contractor shall perform and provide to the Construction Manager a Debris Survey prior to the start of dredging. The Debris Survey shall cover the full extent of the DMUs planned for dredging that season. The Contractor's Debris Survey shall be performed using methods necessary for the Contractor to adequately evaluate the extent and type of debris present and determine appropriate removal methods.
- B. The Contractor shall use the Debris Survey findings to evaluate the locations, types, and sizes of debris and other obstructions and determine whether pre-dredging debris removal is needed to facilitate the dredging operation in accordance with Section 35 20 23 – Dredging.

3.07 REQUIRED SURVEYS – PRE-CONSTRUCTION RIVER SURVEY

- A. Prior to initiating any in-river construction activities, the Contractor shall perform a Pre-Construction River Survey to provide baseline elevation data and document pre-construction conditions in all areas targeted for dredging and capping.
- B. The Pre-Construction River Survey shall cover the full extent of the DMUs and CCUs.
- C. The Pre-Construction River Survey shall consist of bathymetric and topographic surveys, as needed, for shallow water areas.

3.08 REQUIRED SURVEYS – DREDGING

A. Pre-Dredge Surveys

- 1. The Contractor shall perform bathymetric and topographic surveys prior to the start of debris removal and dredging in each DMU (i.e., Pre-Dredge Surveys). The Pre-Dredge Surveys shall cover the full extent of the DMUs, any adjacent upland areas that will be excavated or otherwise disturbed, and any areas where access dredging will be performed. The Pre-Dredge Surveys shall be conducted for each DMU no more than 90 days prior to the start of dredging in that DMU unless otherwise approved by the Construction Manager. The Contractor's Pre-Construction River Survey (Part 3.07) may serve as the Pre-Dredge Survey for DMUs dredged within 90 days of the survey, unless otherwise approved by the Construction Manager.
- 2. The Contractor's Pre-Dredge Survey shall include topographic surveys, as needed, for portions of DMUs in shallow water and adjacent upland areas inaccessible to a survey vessel.
- 3. The Pre-Dredge Survey must be accepted by Construction Manager before dredging commences in a given DMU.
- 4. The Pre-Dredge Surveys will serve as the basis for calculating the volume of material dredged for each DMU.

B. Progress Dredge Surveys

- 1. The Contractor shall perform Progress Dredge Surveys as needed to document and report the progress of dredging operations in accordance with Section 35 20 23 – Dredging and as requested by the Construction Manager.

C. Post-Dredge Surveys

- 1. The Contractor shall perform Post-Dredge Surveys within 5 work days following the completion of dredging each DMU. The Contractor shall verify dredging in the DMU is compliant with the requirements specified in Section 35 20 23 – Dredging. The Contractor shall submit this survey comparison for each DMU to the Construction Manager for review and approval.
- 2. The Contractor shall perform Post-Dredge Surveys in all areas where access dredging is performed.

3. The Contractor's Post-Dredge Surveys shall include topographic surveys, as needed, for portions of DMUs in shallow water and adjacent upland areas inaccessible to a survey vessel.
- D. The Post-Dredge Survey shall be used as the basis for verification and acceptance of dredging by the Construction Manager in accordance with Section 35 20 23 – Dredging.
- E. The Contractor shall provide survey comparisons (e.g., isopach difference maps) for each DMU to verify dredging is compliant with Section 35 20 23 – Dredging. The Contractor shall submit this survey comparison for each DMU to the Construction Manager for review and approval.
- F. The Contractor shall calculate the actual thicknesses and quantities (to the nearest cubic yard) of material dredged for each DMU and submit the quantity calculations to the Construction Manager for approval. The quantity calculations shall be based on a comparison of the Pre- and Post-Dredge Surveys.
- G. The Construction Manager will verify the post-dredge elevations achieve the requirements specified in Section 35 20 23 – Dredging.
- H. If required dredging has not been achieved, as determined by the Construction Manager, the Contractor shall re-dredge and re-survey the area. The re-surveying shall be conducted at no additional expense to the Company.

### 3.09 REQUIRED SURVEYS – POST-DREDGE BACKFILL

#### A. Pre-Backfill Surveys

1. If the Post-Dredge Survey was conducted 14 days or more prior to the start of backfill placement, the Contractor shall conduct a Pre-Backfill Survey if directed by the Construction Manager. The Construction Manager will provide direction regarding whether a Pre-Backfill Survey is required. Pre-Backfill Surveys are not anticipated where dredging is completed in an upstream-to-downstream manner and backfill is placed within 14 days of the completion of dredging.
2. Where separate Pre-Backfill Surveys are performed, they shall serve as the baseline to calculate the thickness and volume of backfill material in each dredged area.
3. Where separate Pre-Backfill Surveys are not performed, the Post-Dredge Surveys described in Part 3.08.C shall serve as the Pre-Backfill Survey to calculate the thickness and volume of backfill material in each dredged area.

#### B. Post-Backfill Placement Surveys

1. The Contractor shall perform Post-Backfill Placement Surveys after backfill placement in each DMU, adjacent upland areas, and any areas where access dredging is performed.
2. The Contractor's survey shall include topographic surveys, as needed, for portions of DMUs in shallow water and adjacent upland areas inaccessible to a survey vessel.
- C. The Pre-Dredge Surveys will serve as the basis for verifying placement of backfill material to pre-dredging elevations.
- D. The Contractor shall provide survey comparisons (e.g., isopach difference maps) for each DMU to verify backfill placement is compliant with Section 31 23 23 – Capping and Backfilling. The

Contractor shall submit this survey comparison for each DMU to the Construction Manager for review and approval.

- E. The Post-Backfill Placement Surveys shall be used as a basis for acceptance of the backfill by the Construction Manager according to verification requirements in Section 31 23 23 – Capping and Backfilling. The Contractor shall calculate the actual thicknesses and quantities (to the nearest cubic yard) of backfill placed in each area and submit the quantity calculations to the Construction Manager for approval.
- F. The Construction Manager will verify the backfill elevations achieve the requirements specified in Section 31 23 23 – Capping and Backfilling.
- G. If the Post-Backfill Placement Surveys indicate the required backfill extent, thicknesses, or elevations have not been achieved within acceptable tolerances as shown on the Drawings and per Section 31 23 23 – Capping and Backfilling, as determined by the Construction Manager, the Contractor shall remove excess material or place additional backfill in the unacceptable areas. Following corrective action, the unacceptable areas shall be re-surveyed by the Contractor at no additional expense to the Company.

### 3.10 REQUIRED SURVEYS – FLOODPLAIN REMOVAL AREAS

#### A. Pre-Excavation Surveys

- 1. The Contractor shall perform Pre-Excavation Surveys in each floodplain removal area prior to the start of removal activities. The Pre-Excavation Surveys shall cover the full extent of the floodplain removal areas that will be excavated and any nearby areas that will be disturbed.
- 2. The Pre-Excavation Surveys must be accepted by Construction Manager before commencing floodplain soil removal in each area.

#### B. Post-Excavation Surveys

- 1. The Contractor shall perform Post-Excavation Surveys in each floodplain removal area within 5 work days following the completion of excavation. The Contractor shall verify excavation is compliant with the requirements of the Drawings and as specified in Section 35 20 23 – Dredging. The Contractor shall submit this survey comparison to the Construction Manager for review and approval.
- 2. The Post-Excavation Surveys must be accepted by the Construction Manager before commencing backfill placement in each area.

#### C. Post-Backfill Placement Surveys

- 1. The Contractor shall perform Post-Backfill Placement Surveys within 5 work days following the completion of backfill placement in floodplain removal areas. The Contractor shall verify backfill placement is compliant with the requirements of the Drawings and as specified in Section 31 23 23 – Capping and Backfilling. The Contractor shall submit this survey comparison to the Construction Manager for review and approval.

- D. The Contractor shall calculate the actual thicknesses and quantities (to the nearest cubic yard) of soil excavated and backfill material placed for each floodplain removal area. The quantity calculations shall be submitted to the Construction Manager for approval.



- E. The Construction Manager will verify the soil excavation and backfill placement elevations achieve the specified requirements.
- F. If required excavation or backfill placement has not been achieved as determined by the Construction Manager, the Contractor shall implement corrective action and re-survey the area at no additional expense to the Company.

### 3.11 REQUIRED SURVEYS – STANTON ROAD SHEETPILE

#### A. Pre-Excavation Survey

- 1. The Contractor shall perform a Pre-Construction Survey of the Stanton Road sheetpile area prior to the start of excavation activities. The Pre-Construction Survey shall cover the full extent of the structure and any nearby areas that will be disturbed. The Pre-construction Survey shall include photographs, videos, and elevations of top of sheetpiles, adjacent ground, and existing structures in sufficient detail to document the conditions of these structures prior to commencing of excavation or sediment removal near the sheetpile wall.
- 2. The Pre-Construction Survey must be accepted by the Construction Manager before commencing soil excavation in the area.

#### B. Post-Excavation Survey

- 1. The Contractor shall perform a Post-Excavation Survey within 5 work days following the completion of excavation at the Stanton Road sheetpile area. The Contractor shall verify excavation is compliant with the requirements of the Drawings and Specifications. The Contractor shall submit this survey comparison to the Construction Manager for review and approval.

#### C. Post-Backfill Placement Survey

- 1. The Contractor shall perform a Post-Backfill Placement Survey within 5 work days following the completion of backfill placement. The Contractor shall verify backfill placement is compliant with the requirements of the Drawings and Specifications. The Contractor shall submit this survey comparison to the Construction Manager for review and approval. The Post-Backfill Survey shall also include photographs, videos, and elevations of the top of sheetpiles, adjacent ground, and structures in sufficient detail to document the post-construction conditions of the structures after sediment removal at the toe of the sheetpile wall and completion of backfill activities on the upland side of the sheetpile wall.

- D. The Contractor shall calculate the actual thicknesses and quantities (to the nearest cubic yard) of soil excavated and backfill material placed. The quantity calculations shall be submitted to the Construction Manager for approval.
- E. The Construction Manager will verify the conditions of the sheetpile wall and adjacent existing structures based on a comparison of the Pre-Excavation and Post-Backfill Surveys to assess any potential damage to these structures and features from sediment removal and backfill, soil excavation and backfill, or other ancillary operations. Any avoidable damage to the existing sheetpile wall, adjacent ground, or structures attributed to construction activities for excavations and backfilling of soil behind the sheetpile wall, installation of waler system, and other ancillary work, or sediment removal and backfilling at the toe of the sheetpile wall, shall be repaired by the Contractor at no additional cost to the Company. Such repair measures, if required, shall be approved by the Construction Manager prior to implementation.

### 3.12 REQUIRED SURVEYS – OUTFALL 001 SHEETPILE

#### A. Pre-Dredge Survey

1. The Contractor shall perform a Pre-Dredge Survey of the Outfall 001 sheetpile area prior to the start of sediment removal activities as specified in Part 3.08. The Pre-Dredge survey at Outfall 001 shall include photographs, videos, and elevations of top of sheetpiles, elevation of water upstream and downstream of the Outfall 001 weir, adjacent ground, and existing structures in sufficient detail to document the conditions of these structures and features prior to commencing sediment removal near the sheetpile wall.
2. The Pre-Dredge Survey must be accepted by the Construction Manager before sediment removal in the area.

#### B. Post-Backfill Survey

1. The Post-Backfill Survey at Outfall 001 shall be performed in accordance with Part 3.08. The Post-Backfill Survey at Outfall 001 shall also include photographs, video, elevations of top of sheetpiles, elevations of water levels upstream and downstream of the Outfall weir, adjacent ground, and existing structures in sufficient detail to document the Post-Backfill condition of these structures and features. The Contractor shall calculate the actual thicknesses and quantities (to the nearest cubic yard) of material excavated and backfill material placed. The quantity calculations shall be submitted to the Construction Manager for approval.

- C. Based on a comparison of the Pre-Dredge and Post-Backfill surveys, the Construction Manager will verify the conditions of the sheetpile wall and adjacent existing structures to assess any potential damage to these structures and features from sediment removal and backfill or other ancillary operations. Any avoidable damage to the existing sheetpile wall or adjacent structures, including existing flow monitoring installations, that can be attributed to sediment removal and backfilling at the toe of the sheetpile wall shall be repaired by the Contractor at no additional cost to the Company. Such repair measures, if required, shall be approved by the Construction Manager prior to implementation.

### 3.13 REQUIRED SURVEYS – CAPPING

#### A. Pre-Placement Cap Survey

1. The Contractor shall perform Pre-Placement Cap Surveys of the CCUs targeted for placement using multi-beam hydrographic survey methods.
2. The Pre-Placement Cap Surveys shall cover the full extent of the CCUs where cap placement will be performed, including the areas where cap placement will be verified by volumetric means as discussed in Section 31.23.23 – Capping and Backfilling.
3. The Pre-Placement Cap Surveys shall be conducted for each CCU no more than 90 days prior to the start of capping dredging in that CCU DMU unless otherwise approved by the Construction Manager.
4. The Contractor's Pre-Construction River Survey (Part 3.07) may serve as the Pre-Placement Cap Survey for CCUs where cap placement commences within 90 days of the survey.
5. The Pre-Placement Cap Surveys must be accepted by the Construction Manager before cap placement commences in the CCU.

B. Progress Capping Surveys

1. The Contractor shall perform Progress Capping Surveys as needed to document and report the progress of capping operations in accordance with Section 31 23 23 – Capping and Backfilling.

C. Post-Placement Cap Survey

1. For each CCU, the Contractor shall perform separate Post-Placement Cap Surveys following placement of each cap layer shown on the Drawings and specified in Section 31 23 23 – Capping and Backfilling. This shall include the areas where cap placement will be verified by volumetric means as discussed in Section 31 23 23 – Capping and Backfilling.
  2. Post-Placement Surveys of each layer must be approved by the Construction Manager prior to commencing placement of subsequent layers.
- D. The approved Pre-Placement Cap Surveys shall be used as a basis for acceptance of the initial cap layer in each CCU. The approved Post-Placement Cap Survey of the preceding cap layer shall be used as a basis for the subsequent cap layer.
- E. The Contractor shall provide survey comparisons for each cap layer in each CCU to verify cap placement is compliant with Section 31 23 23 – Capping and Backfilling. The Contractor shall submit this survey comparison for each CCU to the Construction Manager for review and approval.
- F. The Contractor shall calculate the actual thicknesses and quantities (to the nearest cubic yard) of each cap layer placed in each CCU and submit the quantity calculations to the Construction Manager for approval.
- G. The Construction Manager will verify the cap layer thicknesses achieve the requirements specified in Section 31 23 23 – Capping and Backfilling.

3.14 REQUIRED SURVEYS – ARMORED CAP AND STEEP SLOPE ARMORED CAP STAGED CONSTRUCTION PILOT TEST CELLS

A. Pre-Placement Pilot Test Area Surveys

1. The Contractor shall perform Pre-Placement Pilot Test Area Surveys of the main channel Armored Cap Staged Construction and Steep Slope Armored Cap Staged Construction Pilot Test Areas (designated on the Drawings using multi-beam hydrographic survey methods) no more than 10 days prior to the start of any material placement in the pilot test areas, unless otherwise approved by the Construction Manager.
2. The Pre-Placement Pilot Test Area Surveys conducted prior to the placement of any material shall extend a minimum of 40 feet beyond the perimeter of the pilot test areas designated on the Drawings, perpendicular and parallel to the shoreline.
3. A separate Pre-Placement Pilot Test Area Survey shall be conducted prior to placement of each Slope Grading Fill lift and cap layer placed whenever there is a wait duration of 3 weeks or more following placement of the preceding lift/layer, as shown on the Drawings and specified in Section 31 23 23 – Capping and Backfilling.
4. Pre-Placement Pilot Test Area Surveys for Slope Grading Fill lifts and cap layers placed after the first lift/layer shall be conducted no more than 5 days prior to placement of the

Slope Grading Fill lift or cap layer in each pilot test area. The Pre-Placement Pilot Test Area Survey of each Slope Grading Fill lift and cap layer must be approved by the Construction Manager prior to commencing placement of the next lift/layer in the pilot test area.

5. The Pre-Placement Pilot Test Area Surveys for each individual cap layer of the main channel Armored Cap Staged Construction Pilot Test Areas shall extend a minimum of 40 feet beyond the perimeter of the areas designated on the Drawings, perpendicular and parallel to the shoreline.
6. The Pre-Placement Pilot Test Areas Surveys for the individual Slope Grading Fill lift and cap layers in the Steep Slope Cap Staged Construction Pilot Test Area shall extend a minimum of 40 feet beyond the perimeter of the placed Slope Grading Fill and cap footprint perpendicular to the shoreline and 20 feet beyond the perimeter of the placed Slope Grading Fill and cap, parallel to the shoreline.
7. The Contractor shall perform Pre-Placement Pilot Test Area Surveys prior to each lift/layer of material placement in accordance with Section 31 23 23 – Capping and Backfilling.
8. The Pre-Placement Pilot Test Area Surveys must be accepted by the Construction Manager before commencement of Slope Grading Fill and cap material placement in the pilot test areas.

B. Progress Pilot Test Area Surveys

1. The Contractor shall perform progress surveys, as needed, to document and report the progress of pilot test area operations in accordance with Part 3.13.B.

C. Post-Placement Pilot Test Area Surveys

1. For each pilot test area designated on the Drawings, the Contractor shall perform a Post-Placement Pilot Test Area Survey, using multi-beam hydrographic survey methods, following placement of each Slope Grading Fill lift and cap layer shown on the Drawings and specified in Section 31 23 23 – Capping and Backfilling.
2. The Post-Placement Pilot Test Area Surveys for the main channel pilot test areas shall extend a minimum distance of 40 feet beyond the perimeter of the pilot test area as shown on the Drawings, parallel and perpendicular to the shoreline.
3. The Post-Placement Pilot Test Area Survey for each lift of Slope Grading Fill and layer of cap placement for the Steep Slope Staged Construction Pilot Test Area shall extend a minimum distance of 40 feet beyond the perimeter of the pilot test area perpendicular to the shoreline and 20 feet beyond the perimeter of the pilot test area parallel to the shoreline.
4. Post-Placement Pilot Test Area Surveys shall be completed no more than 5 days after completion of the individual Slope Grading Fill lift and cap layer placements in each pilot test area.
5. Post-Placement Pilot Test Area Surveys of each Slope Grading Fill lift and cap layer in the pilot test areas must be approved by the Construction Manager.

- D. The approved Post-Placement Pilot Test Area Surveys shall be used as a basis for acceptance of the Slope Grading Fill lifts and cap layers in each pilot test area.

- E. The Contractor shall provide survey comparisons for individual Slope Grading Fill lifts and cap layers in each pilot test area to verify cap placement is compliant with Section 31 23 23 – Capping and Backfilling. The Contractor shall submit this survey comparison for each pilot test area to the Construction Manager for review and approval.
- F. The Contractor shall calculate the actual thicknesses and quantities (to the nearest cubic yard) of each Slope Grading Fill lift and cap layer placed in each pilot test area and submit the quantity calculations to the Construction Manager for approval.
- G. The Construction Manager will verify the Slope Grading Fill lift and cap layer thicknesses, as well as slope grades achieved, after placement of Slope Grading Fill in the pilot test area achieve the requirements specified in the Drawings and Section 31 23 23 – Capping and Backfilling.

### 3.15 REQUIRED SURVEYS – STAGED CONSTRUCTION CAPPING

#### A. Pre-Placement Staged Cap Surveys

- 1. The Contractor shall perform Pre-Placement Staged Cap Surveys of the CCUs targeted for staged construction placement, using multi-beam hydrographic survey methods, no more than 90 days prior to the start of capping in that CCU, unless otherwise approved by the Construction Manager.
- 2. The Pre-Placement Staged Cap Surveys performed prior to any cap material placement shall extend a minimum of 40 feet beyond the perimeter of the CCUs designated for staged placement, perpendicular and parallel to the shoreline.
- 3. A separate Pre-Placement Staged Cap Survey shall be conducted prior to placement of each cap layer placed whenever there is a wait duration of 3 weeks or more following placement of the preceding layer, as shown on the Drawings and specified in Section 31 23 23 – Capping and Backfilling. Pre-Placement Staged Cap Surveys for layers placed after the first layer shall be conducted no more than 5 days prior to placement of the cap layer in each CCU. The Pre-Placement Staged Cap Survey of each layer must be approved by the Construction Manager prior to commencing placement of each layer in the CCU.
- 4. The Pre-Placement Staged Cap Surveys for the individual layers of the staged construction cap CCUs shall extend a minimum of 40 feet beyond the perimeter of the CCUs designated on the Drawings, perpendicular and parallel to the shoreline.
- 5. The Contractor's Pre-Construction River Survey (Part 3.07) may serve as the Pre-Placement Staged Cap Survey for CCUs where staged construction cap placement commences within 90 days of the survey.
- 6. The Pre-Placement Staged Cap Surveys must be accepted by the Construction Manager before staged construction cap placement commences in the CCU.

#### B. Progress Staged Capping Surveys

- 1. The Contractor shall perform Progress Capping Surveys as needed to document and report the progress of capping operations in accordance with Part 3.13.B.

#### C. Post-Placement Staged Cap Surveys

- 1. For each CCU designated for staged construction cap placement, the Contractor shall perform a Post-Placement Staged Cap Survey following placement of each cap layer

shown on the Drawings and specified in Section 31 23 23 – Capping and Backfilling. The Post-Placement Staged Cap Survey shall extend a minimum distance of 40 feet beyond the perimeter of the placed cap footprint, parallel to and perpendicular to the shoreline.

2. Post-Placement Surveys shall be completed no later than 5 days after completion of each cap layer.
  3. Post-Placement Surveys of each layer must be approved by the Construction Manager.
- D. The approved Post-Placement Staged Cap Surveys shall be used as a basis for acceptance of the cap layers in each CCU.
- E. The Contractor shall provide survey comparisons for each cap layer in each CCU to verify cap placement is compliant with Section 31 23 23 – Capping and Backfilling. The Contractor shall submit this survey comparison for each CCU to the Construction Manager for review and approval.
- F. The Contractor shall calculate the actual thicknesses and quantities (to the nearest cubic yard) of each cap layer placed in each CCU and submit the quantity calculations to the Construction Manager for approval.
- G. The Construction Manager will verify the cap layer thicknesses achieve the requirements specified in the Drawings and Section 31 23 23 – Capping and Backfilling.

### 3.16 REQUIRED SURVEYS – SLOPE GRADING FILL

#### A. Pre-Placement Slope Grading Fill Surveys

1. The Contractor shall perform Pre-Placement Slope Grading Fill Surveys of the CCUs targeted for Slope Grading Fill, using multi-beam hydrographic survey methods, no more than 90 days prior to the start of material placement in that CCU, unless otherwise approved by the Construction Manager.
2. The Pre-Placement Slope Grading Fill Surveys shall extend a minimum of 40 feet beyond the perimeter of the CCUs designated for Slope Grading Fill, perpendicular to the shoreline and a minimum of 20 feet beyond the perimeter of the CCU parallel to the shoreline.
3. A separate Pre-Placement Slope Grading Fill Survey shall be conducted prior to placement of each Slope Grading Fill lift placed whenever there is a wait duration of 3 weeks or more after placement of the preceding lift, as shown on the Drawings and specified in Section 31 23 23 – Capping and Backfilling. Pre-Placement Slope Grading Fill Surveys for lifts placed after the first lift shall be conducted no more than 5 days prior to placement of the Slope Grading Fill lift. The Pre-Placement Slope Grading Fill Survey of each Slope Grading Fill lift must be approved by the Construction Manager prior to commencing placement of each lift.
4. The Contractor's Pre-Construction River Survey (Part 3.07) may serve as the Pre-Placement Slope Grading Fill Survey for CCUs where Slope Grading Fill placement commences within 90 days of the survey, unless otherwise approved by the Construction Manager.
5. The Pre-Placement Slope Grading Fill Surveys must be accepted by the Construction Manager before Slope Grading Fill placement commences in the CCU.

B. Progress Placement Surveys

1. The Contractor shall perform Progress Capping Surveys as needed to document and report the progress of Slope Grading Fill placement operations in accordance with Part 3.13.B.

C. Post-Placement Slope Grading Fill Surveys

1. For each CCU designated for Slope Grading Fill placement, the Contractor shall perform a Post-Placement Slope Grading Fill Survey following placement of each lift of Slope Grading Fill as shown on the Drawings and specified in Section 31 23 23 – Capping and Backfilling. The Post-Placement Slope Grading Fill Survey for each lift of Slope Grading Fill placement shall extend a minimum distance of 40 feet beyond the perimeter of the placed fill footprint, perpendicular to the shoreline and 20 feet beyond the perimeter of the placed fill parallel to the shoreline.
  2. Post-Placement Slope Grading Fill Surveys shall be completed no more than 5 days after placement of each Slope Grading Fill lift.
  3. Post-Placement Slope Grading Fill Surveys of each Slope Grading Fill lift must be approved by the Construction Manager.
- D. The approved Post-Placement Slope Grading Fill Surveys shall be used as a basis for acceptance of the subsequent cap layers (verified in accordance with Parts 3.13 or 3.15 depending on the nature of the cap layer) in CCUs designated for Slope Grading Fill placement.
- E. The Contractor shall provide survey comparisons for each Slope Grading Fill layer to verify placement is compliant with the Drawings and Section 31 23 23 – Capping and Backfilling. The Contractor shall submit this survey comparison for each CCU designated for Slope Grading Fill placement to the Construction Manager for review and approval.
- F. The Contractor shall calculate the actual thicknesses and quantities (to the nearest cubic yard) of each Slope Grading Fill lift placed in each CCU designated for Slope Grading Fill placement and submit the quantity calculations to the Construction Manager for approval.
- G. The Construction Manager will verify the Slope Grading Fill lift thicknesses and slope grades achieve the requirements specified in the Drawings and Section 31 23 23 – Capping and Backfilling.

3.17 REQUIRED SURVEYS – HABITAT FEATURES

- A. The Contractor shall perform surveys following placement of the anchored rootwads and rock clusters. Survey data shall include horizontal coordinates of the longitudinal endpoints of anchored rootwads and the approximate centroid of rock clusters.
- B. Post-Placement Surveys of each habitat feature component (anchored rootwads and rock clusters) must be approved by the Construction Manager.
- C. The Construction Manager will verify the anchored rootwads and rock clusters meet the requirements specified on the Drawings and in Section 35 44 00 – Waterway Habitat Features.

3.18 REQUIRED SURVEYS – STAGING AREA

- A. The Contractor shall perform topographic surveys to document the locations, elevations, and contours of any construction activities performed by the Contractor at the Staging Area.
- B. The Contractor shall perform topographic surveys to document the extent of materials removed during decommissioning of the Sediment Processing Area at the Staging Area after the dredging.
- C. The Contractor shall perform a Post-Construction Topographic Survey of the Staging Area at the completion of the Project.

3.19 SURVEY RECORD DRAWINGS AND REPORTING

- A. The Contractor shall maintain a complete, accurate log of all control and survey work as it progresses and provide survey logs and field notes to the Construction Manager upon request.
- B. The Contractor shall update the Survey Record Drawings as a condition for approval of the Work per Section 01 78 00 – Project Closeout.
- C. Final quantity computations for dredging, soil excavation, backfilling, and capping shall be computed by the Contractor. The quantities shall be computed to the nearest cubic yard of volume, based on the work areas indicated on the Drawings. The Contractor shall submit, in tabular format, a summary of the actual dredging, soil excavation, backfilling, and capping elevations and quantities achieved to the Construction Manager. The Construction Manager may verify all measurements and quantities.
- D. The Construction Manager will review the results of the survey, including the provided quantities, within 7 calendar days of the submittal and give subsequent release if the Contractor has successfully fulfilled the requirements of the Work.
- E. The Contractor shall provide the Construction Manager the following items for Survey Record Drawings and reporting:
  - 1. All Survey Record Drawings shall meet the requirements specified herein and in Section 01 78 39 – Project Record Documents.
  - 2. AutoCAD Civil 3D (2015) format or compatible Digital Terrain Model (DTM) shall be submitted for each survey. The DTM must contain adequate 3D points and 3D break lines required to accurately model the digital surface to within the above-stated accuracy. The DTM must also provide a 2D polyline defining the limits and footprint of the area(s) surveyed.
  - 3. The Contractor shall provide all raw, unedited survey data in comma-separated XYZ format (i.e., Easting, Northing, Elevation) in the specified Project datums.

**- END OF SECTION -**



**SECTION 02 72 00**

**WATER PRETREATMENT**

**PART 1 – GENERAL**

**1.01 REFERENCED SECTIONS**

- A. Section 01 72 00 – Decontamination of Equipment
- B. Section 02 81 02 – Transportation and Disposal of Waste Material

**1.02 REFERENCES**

- A. 40 Code of Federal Regulations (CFR) 761
- B. 6 New York Code of Rule and Regulations (6NYCRR) Part 370
- C. State Pollutant Discharge Elimination System (SPDES) Permit
- D. Pre-Design Investigation Data Summary Report (Alcoa, 2015)
- E. Route 131 Staging Area Basis of Design, Grasse River Remediation Project, Massena, New York (CDM Smith, November 2016)

**1.03 DESCRIPTION**

- A. The Contractor shall provide all supervision, labor, materials, tools, equipment, power, accessories, and appurtenances necessary to collect, transport, pretreat, and convey by forcemain for final treatment and discharge, all water considered to be polychlorinated biphenyl (PCB)-impacted water. PCB-impacted water is defined as water that comes into contact with PCB-containing materials or surfaces, which includes water from sediment and debris staging and processing, water generated during dredging operations and collected in barges or other equipment, stormwater that accumulates in the Staging Area Exclusion Zone, backwash water generated during operation of the pretreatment system, and water used for decontamination. The water pretreatment system must be able to operate 24 hours per day, 7 days per week. The Contractor shall pretreat the PCB-impacted water to a maximum effluent concentration of 3 micrograms per liter (µg/L) PCB and 20 milligrams per liter (mg/L) total suspended solids (TSS) prior to conveyance to the Outfall 005 Impoundment. Waters in the Outfall 005 Impoundment are treated at the Outfall 004 treatment system, which is regulated under Arconic's current SPDES permit. The Contractor has the option to operate the water pretreatment system in continuous or batch mode.
- B. Predesign testing (Pre-Design Investigation Data Summary Report; Alcoa, 2015) indicates that clarification with polymers, followed by multimedia filtration and carbon adsorption, was able to meet the specified discharge limit. The Contractor is not limited to those unit processes.
- C. The Contractor must process and dewater, as necessary, solids from the pretreatment system and spent filter media for disposal at the Arconic Secure Landfill in accordance with the requirements in Section 02 81 02 – Transportation and Disposal of Waste Material.

1.04 SUBMITTALS

- A. The Contractor shall submit a Water Pretreatment Plan to the Construction Manager for review and approval. At a minimum, the Water Pretreatment Plan shall include:
1. A description of the equipment sizing, procedures, materials, volume capacity, and equipment to be used for pretreatment.
    - a. Pretreatment procedures shall include provisions for managing impacted water before, during, and after a 10-year, 24-hour storm.
    - b. Startup/commissioning procedures, including system inspection, testing, and maintenance.
  2. Procedures, materials, and equipment to be used for conveying pretreated water to the Outfall 005 Impoundment via the forcemain.
  3. A sampling and analysis plan to meet the monitoring and testing requirements anticipated to be included in the final permit to be issued by the New York State Department of Environmental Conservation (NYSDEC). This will include any process sampling that will be used for operation.
  4. A description of the procedures, materials, and equipment to be used to prevent cross-contaminating surfaces and materials not impacted.
  5. A list of all equipment and vessels to be used, including manufacturer names, models, and performance data. The equipment proposed shall consider storage and pumping requirements for impacted water before, during, and after a 10-year, 24-hour storm.
  6. Shop drawings showing the arrangements, sizes, capacities, locations, and depths of all equipment and vessels to be used for water pretreatment. The shop drawings shall include process and instrumentation diagrams, sample ports, and electrical power feed one-line diagrams for equipment.
  7. A description of the plan to manage winter operations, including pre-shutdown decontamination, system flushing, bypasses, forcemain purging, and storage of equipment during the winter as needed. It is anticipated the exclusion zone will be decontaminated sufficiently to allow overwinter precipitation to be directly bypassed to Outfall 005 Impoundment without additional pretreatment processing. Coordination with Arconic plant forces will be necessary for the pumping of collected precipitation and management of the forcemain during winter periods. Provisions will be necessary to store water from the exclusion zone throughout the winter and snowmelt period.
  8. A description of any chemicals (e.g., polymers, coagulants) to be used, including the basis for determining the quantity of chemicals needed. Safety Data Sheets (SDSs) shall be provided for all chemicals proposed for use. A description of any media (e.g. sand, carbon) to be used, including the basis for determining the quantity of media needed, backwashing and process management necessary, anticipated media lifespan, and removal and restocking procedures shall be included. SDSs shall be provided for all media proposed for use.
  9. A description of procedures, material, and equipment to be used for handling and disposal of solids and used filter/adsorption media in accordance with Section 02 81 02 – Transportation and Disposal of Waste Material.

10. An Operations and Maintenance (O&M) Manual for the water pretreatment system.
  11. A description of how the Equipment Decontamination Plan required per Section 01 72 00 – Decontamination of Equipment will be implemented.
- B. The Contractor shall submit electronic copies of all water quality testing data to the Construction Manager immediately upon receipt of the results.

## **PART 2 – PRODUCTS**

### **2.01 GENERAL**

- A. The Contractor shall be responsible for the selection and sizing of all processes, equipment, pumps, piping, manifolds, tanks, valves, gauges, connections, supports, controls, electrical, instrumentation, and appurtenances related to the Work. Products used in the Work shall be produced by manufacturers regularly engaged in the production of such items and have a successful history of product acceptability, as interpreted by the Construction Manager.
- B. Spare parts for the pretreatment system shall be maintained and stored by the Contractor either at the Project Site or within a reasonable distance from the Project Site. Sufficient spare parts shall be provided to ensure the continuous operation of the pretreatment system with minimal downtime.

## **PART 3 – EXECUTION**

### **3.01 MOBILIZATION AND STARTUP**

- A. The Contractor shall make all necessary temporary connections to power the water pretreatment system and related components.
- B. The Contractor shall start up, test, and commission the water pretreatment system to ensure all components are not leaking, are in good operating condition, are operating in compliance with the Specifications, and are operating as intended in the Contractor's approved plans. Testing shall be performed under conditions that simulate normal operating conditions as closely as possible. The Contractor shall test and adjust equipment, controls, and operational procedures and correct any and all deficiencies, as necessary, to successfully complete the commissioning and testing requirements and allow full operation. Water for pretreatment testing of the system shall be used from the existing water tap at the Staging Area. River water shall not be used for testing.
- C. During the commissioning period, the Contractor shall provide training to its operating staff on the proper and safe O&M of equipment and controls.
- D. The Contractor shall perform annual hydrostatic pressure testing of the continuous welded forcemain pipe to the Outfall 005 Impoundment prior to the start of pretreatment operations.
- E. Testing of the water pretreatment system shall be completed prior to initiating dredging operations.

### **3.02 IMPACTED WATER PRETREATMENT**

- A. The Contractor shall pretreat all PCB-impacted water in accordance with applicable federal, state, and local regulations to achieve maximum allowable PCB and TSS concentrations referenced in this Specification.

- B. The pretreatment system shall be located within the exclusion zone at the Staging Area.
- C. The pretreatment system shall be designed with sufficient equipment redundancy to ensure the successful operation and to achieve the specified effluent criteria. At a minimum, redundancy shall be provided for all critical equipment (e.g., filters and adsorption units).
- D. Adequate water storage capacity shall be provided for equalization, backwash operations, maintenance, and effluent storage.
- E. Adequate transfer pumps and piping shall be provided to transfer influent flow to the pretreatment system, for flow through the pretreatment system components, and for conveyance to the Outfall 005 Impoundment. All transfer pumps shall be plumbed and capable of pumping their rated capacity at the total dynamic head required for all system components and through the discharge location.
- F. The pretreatment system shall include instrumentation to measure the continuous, instantaneous, and totalized flow of the pretreatment system influent, pretreatment system effluent, and backwash water flow.
- G. The pretreatment system shall include instrumentation to measure all tank levels and to provide high-, high-high-, and low-level alarms/indications.
- H. The pretreatment system piping network shall be equipped with pressure gauges to indicate the pressures entering and exiting each process unit to provide information on the pressure drop across the units.
- I. The pretreatment system shall be designed so each unit process and tank can be isolated using valves.
- J. The Contractor shall provide sampling ports in the pretreatment system before and after each process unit. All sampling ports shall be identified in the Contractor's submittal for approval by the Construction Manager.
- K. The pretreatment system shall be able to operate in wet weather and in a wet environment through proper protection of pipes, electrical power, and signal conductors.
- L. Water treatment equipment shall be designed/installed to allow operation that is not affected by temperature/seasonal changes for the anticipated period of Work. Installation shall be performed in a manner that allows for efficient winterization of equipment that may be exposed to cold weather.
- M. Equipment, pumps, piping, and tanks shall be maintained in good condition at all times. Any and all leaks shall be immediately and properly repaired.
- N. Filter and adsorption media shall be backwashed or changed out as necessary to maintain effective operation of the pretreatment system.
- O. All pretreatment system components and storage containers shall be clearly marked.
- P. The Contractor shall plan and be prepared to conduct stormwater management and pretreatment system operations 7 days per week, 24 hours per day as necessary based on field conditions (e.g., precipitation).

- Q. Surfactants and/or chemicals shall not be discharged to the pretreatment system, unless the Contractor's pretreatment system is designed to treat the surfactants/chemicals and the surfactants/chemicals have been approved for use by the Construction Manager.
- R. Initial operation of the pretreatment system shall be conducted as a batch operation, as described below, until testing demonstrates the system is functioning in compliance with the specified effluent limits and permit requirements.
  - 1. During the initial batch operations period, effluent water shall be collected and contained until the Construction Manager provides written notification the water can be discharged to the Outfall 005 Impoundment. The methods for storage of water during batch operations shall be proposed by the Contractor.
  - 2. A minimum of 60,000 gallons of effluent from the pretreatment system shall be collected, contained, and tested using batch operations prior to conveyance to the Outfall 005 Impoundment.
  - 3. The Contractor shall collect water samples from the pretreatment system effluent for every approximately 20,000 gallons of water treated during the batch operations period (or more frequently if determined to be appropriate by the Construction Manager).
  - 4. Direct conveyance of water from the pretreatment system effluent to the Outfall 005 Impoundment will be allowed after the analytical results for a minimum of three consecutive water samples (i.e., one sample collected every approximately 20,000 gallons of treated water) collected by the Contractor from the pretreatment system effluent indicate compliance with the specified effluent criteria.
  - 5. If the analytical results for any effluent sample collected during the batch operations period are not compliant with the specified effluent criteria, the Contractor shall prepare and submit a written Corrective Action Report describing the cause and steps to be taken to eliminate the recurrence of such detections; correct any and all deficiencies; re-treat the previously treated water; and conduct re-testing until the operations achieve the acceptance requirements.
- S. The pretreatment system shall be operated and maintained in accordance with the Specifications and the Contractor's approved plans. The Contractor shall collect and record data to demonstrate the equipment is operating within the limits recommended by the equipment manufacturers and in accordance with the Contractor's approved plans.
- T. The pretreatment system shall be modified at no additional cost to the Company if, after installation, the system does not perform as required.
- U. The Contractor shall provide immediate notification to the Construction Manager of any unexpected or non-complying discharge from the pretreatment system. The Contractor shall then adapt and modify the system as required to meet the requirements of all permits.
- V. The Contractor shall perform daily inspections for visual indications of leaks in the pretreatment system and to verify the pretreated water is being conveyed to the Outfall 005 Impoundment as required.
- W. The pretreatment system shall not be decommissioned or removed from service without pre-approval by the Construction Manager.

3.03 TESTING AND REPORTING

- A. The Contractor shall perform sampling and testing of effluent pretreated water for PCB and TSS concentrations per the pretreatment monitoring requirements, methods, and frequencies agreed to by NYSDEC based on Arconic's SPDES Permit. After initial startup sampling has verified the system is operating properly, weekly effluent sampling shall be performed by the Contractor for PCBs and TSS.
- B. During operations, the Contractor shall collect and test water samples before and after each unit operation of the pretreatment system as necessary in order to monitor the performance of the pretreatment system unit processes and for troubleshooting purposes. Sampling shall be conducted by the Contractor as necessary to verify the pretreatment system is functioning in compliance with this Specification and as intended in the Contractor's approved plans. The Contractor's Water Pretreatment Plan shall identify the proposed monitoring frequency, parameters, and methods for this monitoring program.
- C. The Contractor shall submit all monitoring data to the Construction Manager.
- D. Samples collected by the Contractor for chemical analysis shall be analyzed at an Company-approved laboratory.
- E. The Contractor shall immediately notify the Construction Manager if any monitoring data exceed any specified effluent criteria. If any monitoring result exceeds the specified effluent criteria, the Contractor shall perform an engineering evaluation and propose corrective action(s) in a written Corrective Action Report to be submitted to the Construction Manager within 24 hours of notification of the exceedance. At a minimum, the following actions shall be evaluated:
  - 1. Additional testing to assess the problem.
  - 2. Equipment/filter/activated carbon change-out.
  - 3. Repairs to equipment.
  - 4. Operational modifications (e.g., modifying additive dosages, modifying lead/lag operations, modifying the water collection approach, and reducing flow rate).
  - 5. Modification to or replacement of treatment equipment.
  - 6. Temporary cessation of operations (if necessary).

**- END OF SECTION -**

**SECTION 02 81 02**

**TRANSPORTATION AND DISPOSAL OF WASTE MATERIAL**

**PART 1 – GENERAL**

**1.01 REFERENCED SECTIONS**

- A. Section 01 33 00 – Submittal Procedures
- B. Section 01 35 29 – Health, Safety, and Emergency Response Procedures
- C. Section 01 72 00 – Decontamination of Equipment
- D. Section 35 55 29 – Dredged Material Processing and Handling

**1.02 REFERENCES**

- A. 40 Code of Federal Regulations (CFR) 261-268 and 40 CFR 761
- B. 6 New York Codes, Rules, and Regulations (6NYCRR) Parts 360, 364 and 370
- C. Applicable U.S. Department of Transportation (USDOT) and New York State Department of Transportation (NYSDOT) regulations
- D. U.S. Environmental Protection Agency (EPA) SW 846 Method 9095B – Paint Filter Liquids Test
- E. EPA – Approval to Re-Open Existing Cell 3 of the Chemical Waste Landfill, November 9, 2016
- F. Draft Final Secure Landfill Operations and Maintenance Manual (Tetra Tech, July 2017)
- G. National Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD)
- H. If there is a conflict or overlap of any of the above references that are applicable to the Work, the most stringent provision will be controlling. In the event any requirement of this Specification contradicts any such applicable regulatory requirement, immediately notify the Construction Manager of such conflict or contradiction.

**1.03 DESCRIPTION**

- A. The Contractor shall furnish all labor, materials, tools, vehicles, and equipment necessary for the transportation of Contaminated Materials and other wastes from the Staging Area to the Arconic Chemical Waste Secure Landfill (SLF) Cell 3 for disposal by the Landfill Operations Contractor. Contaminated materials include, but are not limited to, dredged material, debris, vegetation, personal protective equipment, and spent filter media and solids generated from water treatment.
- B. The Contractor shall furnish all labor, materials, tools, vehicles, and equipment necessary for the transportation of uncontaminated vegetation to the vegetation stockpile area east of the SLF. The vegetation stockpile will be an area (not exceeding 1 acre) designated by the Construction Manager for placing upland vegetation from the Project. Uncontaminated vegetation will include, but not be limited to, vegetation generated during Project construction activities that have not come into contact with river sediment or other contaminated materials

and that meet the definitions of tree debris in 6NYCRR Part 360.2. Uncontaminated vegetation shall remain outside of any exclusion zones and shall not be handled with equipment from within the exclusion zone.

- C. The Contractor shall furnish all labor, materials, tools, vehicles, and equipment necessary for the transportation of uncontaminated boulders to a stockpile area east of the SLF as designated by the Construction Manager. Uncontaminated boulders will be defined as natural stones larger than 2 feet in diameter and that meet the definition of uncontaminated in 6NYCRR Part 360.2. Any boulders planned for disposal must be approved by the Construction Manager prior to transport.
- D. The Contractor shall furnish all labor, materials, tools, vehicles, and equipment necessary for the transportation of uncontaminated soil to a soil stockpile area east of the SLF as designated by the Construction Manager. Uncontaminated soil will be defined as naturally occurring granular material meeting the definitions in 6NYCRR Part 360.2. Any soil that is planned to be placed in the stockpile must be approved by the Construction Manager prior to transport.

#### 1.04 SUBMITTALS

- A. The Contractor shall submit to the Construction Manager for review a Transportation and Disposal Plan containing all pertinent information relating to the transport and disposal of materials specified herein in accordance with Section 01 33 00 – Submittal Procedures. The Transportation and Disposal Plan shall include, at a minimum, the following:
  - 1. Name and address of all waste transporters to be used to complete the Project.
  - 2. NYSDOT Transporter Identification Number and expiration date.
  - 3. Proof of permit, license, or authorization to transport hazardous material in New York State.
  - 4. Identification of the Contractor's Waste Transport Manager.
  - 5. A description of the procedures, materials, and equipment to be used for transporting waste materials to the SLF including, but not limited to, the following:
    - a. Traffic control procedures
    - b. Truck inspection and decontamination procedures
    - c. Coordination with the Landfill Operations Contractor
    - d. Record keeping procedures and submittal of daily transport reports/trucking logs
    - e. A list of expected waste streams
    - f. Estimated number of truckloads to be transported to the SLF each week along with the maximum truckload weights
    - g. Routes of access and egress to/from the Staging Area and truck staging locations
    - h. Trucking routes from the Staging Area to the SLF and stockpile areas
    - i. Means and methods for covering trucks



- j. Means, methods, and locations for loading material onto trucks at the Staging Area
  - k. A description of the means and methods to estimate the weight of each truckload
  - l. A description of the bills of lading and chain-of-custody procedures
  - m. A template for bills of lading that will be used to document the chain of custody of each truckload of materials transported to the SLF and stockpile areas
  - n. Means and methods for unloading material at the SLF and stockpile areas
- B. The Contractor shall submit a copy of the bill of lading for each truckload transported from the Staging Area to the SLF. At a minimum, each bill of lading shall contain the following information:
- 1. Load number (sequential)
  - 2. Bill of lading number
  - 3. Truck ID number (e.g., license plate number of the truck and/or trailer used)
  - 4. Type of material transported (e.g., dewatered/processed sediment, debris, vegetation)
  - 5. Disposal location (e.g., SLF)
  - 6. Date and time of loading at the Staging Area
  - 7. Approximate volume and weight of the material
  - 8. Signature of the Contractor's Waste Transport Manager and the truck driver prior to departing the Staging Area
  - 9. Date and time of departure from the Staging Area
  - 10. Date and time of unloading at the SLF and stockpile areas
  - 11. Signature of the truck driver and the Landfill Operations Contractor when the materials are unloaded at the SLF
- C. Daily transportation reports/logs submitted to the Construction Manager on the day following Work on the Project. At a minimum, the daily reports/logs shall summarize the following information for each truckload:
- 1. Date
  - 2. Load number (sequential)
  - 3. Bill of lading number
  - 4. Type of material transported (e.g., dewatered/processed sediment, debris, vegetation)
  - 5. Disposal location (e.g., SLF)
  - 6. Approximate volume and weight of the material

**1.05 REGULATORY REQUIREMENTS**

- A. The requirements governing hazardous material health and safety contained in Section 01 35 29 – Health, Safety and Emergency Response Procedures, as well as all other applicable federal, state, and local laws, codes, and ordinances that govern or regulate hazardous materials and wastes, shall apply to the work of this Specification, including the New York State Hazardous Waste Regulations, EPA Resource Conservation and Recovery Act (RCRA) regulations at 40 CFR 261-268, and polychlorinated biphenyl (PCB) regulations at 40 CFR 761.
- B. Trucks used to transport Contaminated Material to the SLF over public roads will require a Waste Transporter Permit issued pursuant to 6NYCRR Part 364. The Contractor shall obtain all federal, state, and local permits as required for the transport of the Contaminated Material. The Contractor shall adhere to all permit requirements.
- C. The Contractor must comply with the requirements of 6NYCRR Part 372 - Hazardous Waste Manifest System and Related Standards for Generators, Transporters and Facilities, and specifically 372.3(b) – Manifest Requirements.

**PART 2 – PRODUCTS (NOT USED)**

**PART 3 – EXECUTION**

**3.01 GENERAL**

- A. The Contractor shall coordinate with the Construction Manager and the Landfill Operations Contractor to utilize Cell 3 of the SLF, which is Toxic Substances Control Act regulated and RCRA approved, for disposal of dredged materials and other waste and to confirm the materials to be disposed meet the landfill requirements. The Contractor shall be responsible for delivery and unloading of the materials at the SLF in accordance with the SLF Operations and Maintenance Manual. Handling of the unloaded materials and disposal in the landfill will be managed by the Landfill Operations Contractor under a separate contract.
- B. The Contractor shall assign at least one Waste Transport Manager to coordinate the loading, transport, and unloading of trucks transporting materials from the Staging Area to the SLF and stockpile areas. The Waste Transport Manager shall be at the Project Site when waste is being transported from the Staging Area. The Waste Transport Manager shall be trained in accordance with the requirements of 49 CFR Part 172 Subpart H. The Waste Transport Manager shall ensure the approved transport haul routes and chain of custody requirements are followed. The Waste Transport Manager shall prepare, review, and sign the bills of lading for each truck prior to departing the Staging Area. The Waste Transport Manager shall be responsible for marking/labeling/placarding each shipment in accordance with applicable Department of Transportation requirements. The Waste Transport Manager shall also be responsible for tracking the location of each truck transporting materials from the Staging Area to the disposal location and shall be capable of communicating directly with the truck driver by telephone or radio.
- C. Contractor personnel shall wear personal protective equipment and protective clothing consistent with the levels of protection indicated in the Contractor's Health and Safety Plan.

**3.02 WASTE PROFILES AND SHIPPING DOCUMENTS**

- A. The Contractor shall prepare bills of lading for each truckload of material to be transported to the SLF and stockpile areas. Bills of lading shall be available at all times during transport for inspection by the Construction Manager or the Company. The bills of lading will be used to guarantee the identity and integrity of the materials transported from the Staging Area to the

SLF and shall serve as a chain of custody. Each bill of lading shall include the information described in Part 1.04.B. The content and format of the bills of lading shall be approved by the Construction Manager prior to transporting materials.

- B. The Contractor shall be responsible for preparing all applicable documentation (e.g., waste profiles, bills of lading, manifests) for disposal of any waste materials not suitable for disposal in the SLF.
- C. The Contractor shall submit to the Construction Manager documentation certifying that all waste materials were transported and disposed of properly. Documentation shall include:
  - 1. Signed original bills of lading.
  - 2. Waste profiles and waste manifests (for materials not suitable for disposal in the SLF).

### 3.03 WASTE PHYSICAL PROPERTY REQUIREMENTS

- A. The processed waste at the Staging Area shall meet the following requirements prior to loading and transport to the SLF:
  - 1. Dredged materials shall pass the Paint Filter Test (EPA Test Method 9095B). The Paint Filter Test will be performed by the Construction Manager or their designee.
  - 2. Dredged materials shall have a minimum bearing strength of 6 pounds per square inch. Bearing strength will be measured using a pocket penetrometer test performed on a sample of the processed waste compacted in a compaction mold using a Proctor compaction effort (ASTM D1557). Pocket penetrometer testing, including sample preparation, will be performed by the Construction Manager or their designee.
- B. Waste not meeting the Paint Filter Test or the minimum bearing strength requirements specified herein shall not be transported to the SLF and shall be processed further by the Contractor as required to meet the requirements specified herein with no additional cost to the Company.

### 3.04 TRANSPORT AND DISPOSAL

- A. The Contractor shall transport all waste in accordance with all applicable federal, state and local regulations.
- B. The Contractor shall be responsible for dewatering and stabilizing dredged material in accordance with Section 35 55 29 – Dredged Material Processing and Handling prior to transport to the SLF.
- C. The Contractor shall be responsible for segregating, processing, and sizing debris and vegetation as necessary to meet the landfill criteria described in Section 35 55 29 – Dredged Material Processing and Handling prior to transport to the SLF.
- D. The Contractor shall be responsible for providing adequate measures to prevent the development of free liquids (as determined by the Paint Filter Test) during transport and to prevent spillage or discharge of waste from the transportation vehicle during waste hauling operations.
- E. All processed material and debris shall not contain free liquids (based on Paint Filter Testing and visual observation by the Construction Manager) prior to loading into trucks for transport.

- F. The Contractor's Waste Transport Manager shall coordinate with the Landfill Operations Contractor in a timely manner prior to transporting trucks to the SLF.
- G. The Contractor shall load dewatered/stabilized sediment, debris, and vegetation into covered roll-off containers, covered dump trucks, or covered dump trailers in accordance with the Contractor's approved Transportation and Disposal Plan. All material transported from the Staging Area shall be completely covered. The loads shall be secured so that there is no material or dust being released from the vehicle during transport. The Contractor shall ensure that soil, sediment, liquid, or other material is not released during transport.
- H. Materials shall only be transported in trucks licensed and designed for secure soil transport as to prevent the release and deposit of any materials over public roads, private roads, and other pavements. No leakage is allowed from trucks.
- I. The Contractor shall estimate the volume of each truckload prior to leaving the Staging Area. Trucks shall not be overloaded.
- J. The Contractor shall comply with the decontamination requirements for vehicles and equipment hauling waste to the SLF as discussed in the SLF Operations and Maintenance Manual.
- K. Trucks transporting dredged material from the Staging Area to the SLF shall follow the haul route shown on the Drawings.
- L. The Contractor shall unload materials at the SLF and stockpile areas in coordination with the Construction Manager. The Contractor shall be responsible for verifying that the material has been fully released from the trucks at the SLF. The Landfill Operations Contractor will provide direction regarding the locations where the materials shall be unloaded at the SLF. The Landfill Operations Contractor will be responsible for directing the Contractor's trucks on traffic patterns. The Landfill Operations Contractor will provide spotters, traffic control, and signage along the route to and from the landfill on Arconic property.
- M. The Contractor shall retain custody of each truckload of dredged and processed sediment, debris, vegetation, and other transported materials until accepted at the appropriate disposal site. Acceptance of the materials at the SLF will occur when the waste hauling procedures and placement requirement as outlined in the SLF Operations and Maintenance Manual have been confirmed by the landfill operator. If the applicable requirements are not fulfilled, the Contractor shall retain custody of the materials and the Construction Manager shall be notified immediately.
- N. The Contractor shall comply with the requirements for waste unloading as discussed in the SLF Operations and Maintenance Manual.
- O. The Contractor shall deliver waste material to the SLF or any other applicable disposal location within 90 days of generation. The generation date for dredged material shall coincide with date of material offloading to the Staging Area.
- P. The Contractor shall be responsible for removal of solid waste and debris at the Project Site throughout the duration of the Work. At all times, Contractor shall ensure that the area within the Limits of Work and the adjoining areas, including roadways, access areas, and storage areas used, are free of solid waste and debris and shall clean up the Project Site and remove all solid waste and debris as Work progresses.

**- END OF SECTION -**

**SECTION 05 12 00**

**STEEL**

**PART 1 – GENERAL**

**1.01 REFERENCED SECTIONS**

- A. Section 01 33 00 – Submittal Procedures
- B. Section 02 21 00 – Surveys

**1.02 REFERENCES**

- A. ASTM International (ASTM)
  - 1. ASTM A6 – Standard Specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling
  - 2. ASTM A36 – Standard Specification for Carbon Structural Steel
  - 3. ASTM A572 – Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel
  - 4. ASTM A615 – Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
  - 5. ASTM A690 – Standard Specification for High-Strength Low-Alloy Nickel, Copper, Phosphorus Steel Pipe Piles and Sheet Piling with Atmospheric Corrosion Resistance for Use in Marine Environments
  - 6. ASTM F3125 – Standard Specification for High Strength Structural Bolts, Steel and Alloy Steel, Heat Treated, 120 ksi (830 MPa) and 150 ksi (1040 MPa) Minimum Tensile Strength
  - 7. American Welding Society (AWS) D1.1 – Structural Welding Code: Steel

**1.03 DESCRIPTION**

- A. The Work covered in this Specification consists of all considerations necessary for the Contractor to design, furnish appropriate materials, and construct a waler system as shown on the Drawings for the existing sheetpile structures at Stanton Road. The Contractor's design for the waler system shall be proposed by the Contractor in a work plan and approved by the Construction Manager.
- B. The Contractor shall furnish all labor, equipment, material, and incidentals required to handle, store, and install all steel waler systems, including connections to be designed by the Contractor in the work plan and approved by the Engineer.
- C. All necessary structural shapes, waler sections, bolts, washers, nuts, connections, and miscellaneous appurtenances shall be of the form, weights, grades, shapes, and lengths shown on the Contractor's approved work plan.
- D. The Contractor shall comply with all applicable state and local requirements and codes.

#### 1.04 SUBMITTALS

- A. The following submittals shall be submitted for Construction Manager review and approval in accordance with Section 01 33 00 – Submittal Procedures:
  - 1. A work plan that presents the Contractor's design for the waler system and includes, at a minimum, the following information:
    - a. A description of the methods, equipment, materials, and procedures for installing the waler system, including connections to the existing sheetpiles.
    - b. A description of the means and methods for accessing the Work location.
    - c. A description of the means and methods for soil excavation, staging, and disposal to facilitate waler installation, including erosion control measures.
    - d. A description of the installation equipment and anticipated ground pressures adjacent to the existing sheetpiles during installation of the waler system.
    - e. The general construction sequence and schedule for installation of the waler system.
    - f. Shop drawings, product data, and waler system connection details; materials of construction; details of installation, including welding details; installation equipment; and construction procedures. Waler system details should include the proposed depth of waler system installation from the top of the sheetpile.
    - g. A description of the methods, equipment, materials, and procedures for restoring the disturbed area.
  - 2. Certification that materials meet ASTM requirements.
  - 3. The Contractor's qualifications as described in herein.
  - 4. Welder qualifications and weld procedures in accordance with AWS D1.1.

#### 1.05 PROJECT RECORD DOCUMENTS

- A. Within 2 weeks after the completion of waler installation, the Contractor shall provide the Construction Manager with a drawing showing the as-installed details of the waler, including the location of the waler relative to the top of existing sheetpiles.

#### 1.06 QUALITY ASSURANCE

- A. The Contractor shall comply with all applicable state and local requirements and codes.
- B. The Contractor shall have at least 5 years of experience comparable to the Work shown and specified, as well as employ labor and supervisory personnel who are similarly experienced in this type of work.
- C. The welder shall be certified by the AWS.
- D. Approval given by the inspection agencies shall not relieve the Contractor of its responsibilities for performing the Work in accordance with this Specification and the Contractor's approved work plan.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Storage of waler system sections and other structural materials shall be such that sagging, which would cause permanent deformation, shall be prevented.
- B. Handling shall minimize bending stresses in the waler sections. Concentrated loads, which occur during stacking or lifting, shall be kept below the level that would produce permanent deformation of the material.

**PART 2 – PRODUCTS**

2.01 MATERIALS

- A. All manufactured materials incorporated into permanent construction shall be new.
- B. All steel material for the waler system shall be new material in good condition and free of rust and pitting. Used steel members shall not be permitted.
- C. All structural steel for wales, fabricated connections, and bearing plates shall conform to ASTM A36.
- D. Nuts, washers, and high-strength steel bolts shall conform to the requirements of ASTM F3125 Grade A325 (minimum).
- E. All bolts, nuts, washers, and plates shall be galvanized.

2.02 EQUIPMENT

- A. All installation equipment shall be maintained by the Contractor in good operating condition and operated according to the manufacturer's recommendations.

**PART 3 – EXECUTION**

3.01 CONSTRUCTION

- A. Prior to construction, the Contractor shall conduct a pre-construction survey of upland areas and structures to document baseline conditions. After construction, the Contractor shall conduct a post-construction survey of upland areas and structures to document post-construction conditions. Surveys shall be performed in accordance with Section 02 21 00 – Surveys.
- B. The Contractor shall be responsible for the selection of methods, equipment, and procedures for installing the waler system, including connections on the existing sheetpiles. The Contractor's proposed methods, procedures, equipment, and materials shall be subject to review and approval by the Construction Manager and shall be consistent with the requirements set out in this Specification.
- C. The Contractor shall observe the condition of the existing sheetpiles, and the Project Site in general, and review available geophysical test results for the sheetpiles as presented in the reference documents prior to submitting the work plan for the waler connection.
- D. Waler installation must be completed prior to performing dredging and backfilling in adjacent dredge areas in accordance with the construction sequencing on the Drawings.

- E. If the waler is damaged during handling or installation for any reason, it shall be removed and replaced at the Contractor's expense.
- F. The waler shall be installed on the inside of the existing sheetpile structure, as shown on the Drawings. The Contractor shall provide connection details in the work plan that will be subject to review by the Construction Manager. Shims may be needed to provide a level surface for waler system connection.
- G. After dredging and backfilling operations are complete in the river adjacent to the sheetpile structure, the Contractor shall restore the disturbed area in accordance with the Drawings and the Contractor's approved work plan.

3.02 CLEAN UP

- A. The Contractor shall remove from the Project Site all waste, surplus materials, and debris from the operation. The debris and waste materials shall be legally disposed of off site.

**- END OF SECTION -**



**SECTION 31 13 13**

**SELECTIVE SHORELINE VEGETATION REMOVAL**

**PART 1 – GENERAL**

**1.01 REFERENCED SECTIONS**

- A. Section 01 14 00 – Work Restrictions
- B. Section 01 72 00 – Decontamination of Equipment
- C. Section 02 81 02 – Transportation and Disposal of Waste Material
- D. Section 31 23 23 – Capping and Backfilling
- E. Section 35 20 23 – Dredging

**1.02 REFERENCES (NOT USED)**

**1.03 DESCRIPTION**

- A. The Contractor shall trim shoreline vegetation and remove trees necessary for equipment to access sediment for removal and subsequent backfilling in accordance with Section 35 20 23 – Dredging and Section 31 23 23 – Capping and Backfilling.
- B. The Contractor shall transport and dispose of trees and vegetation removed prior to or during dredging.
- C. Trees with diameters at breast height (DBHs) of 6 inches or more in the vicinity or below the shoreline elevation shown on the Drawings shall be left in place unless otherwise approved by the Construction Manager. Stumps and root balls shall not be removed unless approved by the Construction Manager.

**1.04 SUBMITTALS**

- A. Pre-Construction
  - 1. A Shoreline Vegetation Trimming and Removal Plan shall be prepared by an Arborist certified by the International Society of Arboriculture and submitted to the Construction Manager for approval. The plan shall describe all equipment and procedures to be used to remove, transport, and dispose of shoreline vegetation, and provide a schedule for operations. The plan shall identify the procedures and locations for any chipping of the removed vegetation.
  - 2. A Tree Removal Plan shall be submitted to the Construction Manager for approval. The plan shall identify all trees with a DBH of 6 inches or greater that the Contractor proposes to remove. The Tree Removal Plan must be prepared by a Certified Arborist and shall include a table and drawings identifying the location, size, species, and condition of each tree that the Contractor proposes to remove. The Tree Removal Plan shall describe all equipment and procedures to be used to remove, transport, and dispose of trees and provide a schedule for operations. The plan shall identify the procedures and locations for chipping and sizing of removed trees.

**PART 2 – PRODUCTS (NOT USED)**

**PART 3 – EXECUTION**

**3.01 EXECUTION**

- A. Prior to tree removal, the Contractor shall perform a field inspection with the Construction Manager to review all trees proposed by the Contractor for removal. Tree removal shall not proceed until the Tree Removal Plan is approved by the Construction Manager and EPA. Upon submittal to the Construction Manager, the Tree Removal Plan will be reviewed with EPA and an experienced bat biologist retained by EPA or the Company to verify that the trees proposed for removal do not represent a potential roosting tree for the northern long-eared bat (*Myotis septentrionalis*). The Construction Manager will coordinate EPA's review of the Contractor's Tree Removal Plan.
- B. All tree removal, shoreline vegetation trimming, and any associated chipping shall be conducted with the oversight of a Certified Arborist retained by the Contractor.
- C. All tree removal, shoreline vegetation trimming, and any associated chipping shall be conducted in accordance with Section 01 14 00 – Work Restrictions.
- D. The Contractor shall trim shoreline vegetation prior to dredging operations to facilitate the dredging operations in shoreline areas. The Contractor shall limit the removal of shoreline vegetation to the extent needed to provide access for dredging, backfilling, and shoreline restoration.
- E. The Contractor shall remove and transport shoreline vegetation and trees that have not come in contact with river sediment using different equipment than is used for debris removal or dredging, unless the equipment has satisfied the decontamination requirements of Section 01 72 00 – Decontamination of Equipment.
- F. The Contractor shall transport and offload shoreline vegetation at the Staging Area, or other location approved by the Construction Manager.
- G. Shoreline vegetation that has not come in contact with river sediment shall be segregated and managed in accordance with Section 02 81 02 – Transportation and Disposal of Waste Material.
- H. Any shoreline vegetation that has come in contact with river sediment shall be segregated and transported for disposal at the Arconic Secure Landfill.
- I. The Contractor shall implement conservation measures, as deemed necessary by EPA, for any potential roosting tree for the northern long-eared bat (*Myotis septentrionalis*). Conservation measures may include, but are not limited to, additional field surveys, delaying tree removal until after the bat mating and pup season, or other measures identified by EPA.

**- END OF SECTION -**

**SECTION 31 23 00**

**EARTHWORK**

**PART 1 – GENERAL**

**1.01 REFERENCED SECTIONS**

- A. Section 00 31 00 – Available Project Information
- B. Section 01 33 00 – Submittal Procedures
- C. Section 02 21 00 – Surveys
- D. Section 31 23 23 – Capping and Backfilling
- E. Section 35 20 23 – Dredging

**1.02 REFERENCES**

- A. ASTM International (ASTM)
  - 1. ASTM D6913 – Test Method for Particle Size Distribution of Soils Using Sieve Analysis
  - 2. ASTM D1557 – Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort
  - 3. ASTM D2922 – Density of Soil in Place by Nuclear Methods (Shallow Depth)
  - 4. ASTM D3017 – Standard Test Method for Water Content of Soil in Place by Nuclear Methods (Shallow Depth)
- B. American Association of State Highway and Transportation Officials (AASHTO)
- C. New York State Department of Transportation (NYSDOT) Standard Specifications and all addenda and supplements thereto, latest edition
- D. Occupational Safety and Health Administration (OSHA) excavation safety standards (29 Code of Federal Regulations [CFR] Part 1926.650 Subpart P)
- E. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply

**1.03 DESCRIPTION**

- A. The Contractor shall furnish all required labor, materials, equipment, and incidentals necessary for earthwork on upland properties not associated with in-river dredging or floodplain removal work described in Section 35 20 23 – Dredging and Section 31 23 23 – Capping and Backfilling. The Contractor shall perform all clearing, stripping, excavation work, and grading necessary to accomplish the Work. The Contractor shall place and compact backfill and fill, and dispose of unsuitable, waste, and surplus materials as shown on the Drawings and as specified herein. The Work shall include excavation behind existing sheetpile structures in preparation for

sediment removal around the sheetpiles, backfilling, and fill; compaction; grading; disposal of unsuitable, waste, and surplus materials; and restoration of excavation surfaces.

- B. Wherever the requirement for compaction is referenced to herein, it shall mean minimum percentage of maximum density as determined by ASTM D1557.

#### 1.04 SUBMITTALS

The Contractor shall submit, in accordance with Section 01 33 00 – Submittal Procedures, the following and as elsewhere specified in this Specification:

##### A. Cut and Fill Plan

1. The Contractor shall submit a Cut and Fill Plan to the Construction Manager at least 14 calendar days prior to commencing cut and fill operations in accordance with Section 01 33 00 – Submittal Procedures. The plan shall include figures and written description of cut and fill locations and rates and the Contractor's coordination of cut and fill operations.
  2. The Cut and Fill Plan shall also include the location for and proposed height of material stockpiles.
  3. Grades shall be made so the maximum slope does not exceed 3H:1V. The maximum differential fill height between adjacent areas shall not exceed 8 feet at any time.
- B. The Contractor shall submit the proposed methods and sequence of construction, including excavation and earthwork operations, excavation limits, excavation support system designs (if required), dewatering (if required), backfilling and filling, material conditioning and handling, compaction equipment, and material sources for the various portions of the Work.
  - C. The Contractor shall submit compaction and laboratory test results of fill used for backfilling excavated areas to the Construction Manager.
  - D. The Contractor shall submit to the Construction Manager complete product data for materials specified in this Specification.
  - E. The Contractor shall submit laboratory test results for all fill materials (e.g., maximum density, gradation, Atterberg limits, organic content, and sand equivalent, as applicable) at least 72 hours prior to importing or placing any fill.

#### 1.05 STATUTORY REQUIREMENTS

- A. All excavation and trenching shall comply with the requirements of OSHA excavation safety standards (29 CFR Part 1926.650 Subpart P) and state and local requirements. Where conflict between OSHA, state, and local regulations exists, the most stringent requirements shall apply.

#### 1.06 QUALITY ASSURANCE

- A. Regulations. The Contractor shall perform all Work in accordance with current applicable regulations and codes of all federal, state, and local agencies.
- B. The Contractor shall have at least 5 years of experience comparable to the Work shown and specified, employing labor and supervisory personnel who are similarly experienced in this type of work.

- C. The Contractor's surveyor shall be a Professional Land Surveyor or Professional Engineer, registered in the State of New York, and shall have at least 5 years of experience in construction survey of the type required under this Contract and acceptable to the Construction Manager and Company. Surveying shall be performed in accordance with Section 02 21 00 – Surveys.
- D. Prior to the placement of fill material, the Contractor shall coordinate with the Construction Manager to verify the suitability of the existing subgrade soil, and with the Construction Quality Control Manager (CQC Manager) to perform in-place soil density tests as required to verify the bearing capacity of the subgrade is sufficient.
- E. Prior to and during the placement of fill, the Contractor shall coordinate with the CQC Manager to perform in-place soil density tests to verify the backfill/fill material has been compacted in accordance with the compaction requirements specified herein. The Construction Manager may designate areas to be tested.

#### 1.07 PROTECTION

- A. All onsite and offsite features damaged by the construction shall be replaced with materials fully identical to and of the same type, dimension, size, species, and conditions before the damage, to the satisfaction of the Company.
- B. Slope Stability
  - 1. Portions of the Project Site are underlain by soft compressible clay soils (refer to available geotechnical information referenced in Section 00 31 00 – Available Project Information). The Contractor shall take all necessary precautions to avoid a slope stability or bearing-capacity failure due to excavation, fill placement, stockpiling construction materials, ineffective dewatering, or any other construction activities.
  - 2. The Contractor shall be solely responsible for the stability of all roadway embankments, unbalanced fills, stockpiles, and all other construction operations.

#### 1.08 SOIL TESTING

- A. Prior to the placement of fill and during such placement, the Construction Manager may select areas within the excavation for testing. The Contractor shall cooperate fully in obtaining the information desired.
- B. Materials will be tested and observed as described in the following paragraphs. The Contractor shall cooperate by allowing free access to the Work for selection of test materials and observations.
  - 1. Materials to be used in the Work shall be tested by a certified independent laboratory, engaged by the Contractor and acceptable to the Construction Manager, to demonstrate conformance with the requirements of these Specifications. Such testing will be paid for by the Contractor. The Contractor shall deliver test reports and material certifications to the Construction Manager before using any material in the Work.
  - 2. If field test results are not in conformance with the requirements of these Specifications, the costs of re-testing and correction of deficiencies shall be borne by the Contractor.
  - 3. Earthwork activities performed without a properly scheduled inspection are subject to removal and replacement or additional testing as directed by the Construction Manager at no expense to the Company.

4. Testing methods shall comply with the latest applicable ASTM or AASHTO Standards.
  5. During the placement of fill, the certified independent laboratory, engaged by the Contractor and acceptable to the Construction Manager, shall perform in-place soil density testing to confirm fill material has been compacted in accordance with the requirements of this Specification. The Construction Manager may designate areas to be tested. The Contractor shall notify the Construction Manager at least 72 hours in advance of scheduled compaction testing.
    - a. Fill Areas. At least one density and moisture content test shall be conducted for each 1,200 square feet of surface area for each lift of fill within excavation areas behind the existing sheetpile wall or as directed by the Construction Manager.
    - b. Additional tests may be required as determined by the Construction Manager.
  6. Materials that have been previously tested may be periodically subjected to additional testing and be rejected if it is determined they no longer conform to the requirements of these Specifications. Rejected materials shall be removed from the Work immediately by the Contractor as instructed by the Construction Manager.
- C. The Construction Manager may conduct additional soil testing. The Contractor shall cooperate fully in obtaining the information desired and allowing free access to the Work.

#### 1.09 DELIVERY, STORAGE, AND HANDLING

- A. If granular fill materials are delivered to the Project Site prior to placement approval, materials shall be stockpiled on site in areas as directed by the Construction Manager. Provision shall be implemented to minimize surface water impact on the stockpile. Removal and placement of granular fill material shall be done in a manner to minimize intrusion of soils adjacent to and beneath the stockpile.

#### 1.10 DEFINITIONS

- A. **Percent Compaction** is the required in-place dry density of the material, expressed as a percentage of the maximum dry density of the same material, as determined in the laboratory by ASTM D1557 (Modified Proctor).
- B. **Optimum Moisture Content** is the moisture content (percent by dry weight) corresponding to the maximum dry density of the same material as determined by ASTM D1557.
- C. **In-the-Dry** is defined as an excavation subgrade where the groundwater level has been lowered to achieve a stable subgrade with no ponded water, mud, or muck, and shall be able to support construction equipment without rutting or disturbance and shall be suitable for the placement and compaction of fill material.
- D. **Unsuitable Soil** includes organic soils, existing fill, soft or disturbed soils, or frozen soil.
- E. **Objectionable Material** includes topsoil, organic matter, contaminated soil, construction debris, perishable materials, snow, ice, and rocks or lumps of cemented soils more 6 inches in dimension.
- F. **Over-Excavation** is removal of unsuitable soil or objectionable material at or below the normal grade of the excavation or subgrade as indicated on the Drawings.

- G. **Subgrade** is the bottom surface of a trench or excavation extending to the underside of Project Site improvements, including dimensioned fill, structures, paving, or other surfacing material.
- H. **Pass** shall mean a single complete coverage with compaction equipment over the entire surface of an exposed lift or subgrade being compacted.

## PART 2 – PRODUCTS

### 2.01 MATERIALS

- A. Backfill and fill materials for upland work shall be suitable excavated materials, natural or processed mineral soils obtained from offsite sources, or graded crushed stone or gravel. Backfill and fill materials shall be free of all organic material, trash, snow, ice, frozen soil, or other objectionable materials that may be compressible or that cannot be properly compacted. Soft, wet, plastic soils that may be expansive, clay soils having a natural, in-place water content in excess of 30%, soils containing more than 5% (by weight) fibrous organic materials, and soils having a plasticity index greater than 30 shall be considered unsuitable for use as backfill and fill. Backfill and fill materials shall have a maximum expansion of 1% when testing is performed on a sample remolded to 95% of maximum dry density (per ASTM D698) at 2% below optimum moisture content under a 100 pound per square foot surcharge.
- B. Type B and topsoil material as specified in Section 31 23 23 – Capping and Backfilling shall be used to backfill the temporary excavation behind the sheetpile structure at Stanton Road.

### 2.02 CONFORMANCE TESTING

- A. Conformance testing for physical properties shall be conducted by the Contractor's Quality Control Laboratory on fill materials prior to their use on the Project. The following tests frequencies are applicable specifically to the backfilling of the temporary excavation behind the existing sheetpile structure at the Stanton Road location. Testing for the fill material to be used for the temporary excavation behind the sheetpile wall shall be performed at the minimum frequencies specified below or as directed by the Construction Manager:

<u>Test</u>	<u>Method</u>	<u>Frequency</u>
Grain Size	ASTM D6913	Every 500 cubic yards (cy) or change in material
Atterberg Limits	ASTM D4318	Every 500 cy or change in material
Moisture/Density	ASTM D698	Every 500 cy or change in material
Natural Moisture	ASTM D2216	Every 500 cy or change in material

- B. Sampling for testing chemical quality of all imported materials shall be performed in accordance with Section 31 23 23 – Capping and Backfilling.
- C. Results of the tests shall be submitted to the Construction Manager within 24 hours of test completion and prior to material use on the Project. The Construction Manager reserves the right to reject material based on the results of these conformance tests or independent quality

assurance testing conducted by the Construction Manager. Rejected materials shall be removed from the Project Site at no cost to the Company.

### **PART 3 – EXECUTION**

#### **3.01 GENERAL EXCAVATION PROCEDURES**

- A. Excavation shall be made to the grades and extend to the width and depths shown on the Drawings or as specified herein.
- B. Excavation shall be performed in the dry and shall be accomplished by methods that preserve the undisturbed state of subgrade soils.
- C. The excavated soil shall be temporarily stockpiled on site and may be reused as backfill at the discretion of the Construction Manager based on visual indicators or analytical sampling and testing. Analytical sampling and testing of the excavated soils, if required, will be performed by the Construction Manager or a designee.
- D. When excavations have reached prescribed grades, the Construction Manager will be notified and will inspect the subgrade conditions. If materials or conditions are not satisfactory to the Construction Manager or Engineer, the Construction Manager will issue directions for replacing materials or correcting conditions.
- E. Excavation equipment shall be satisfactory for carrying out the Work in accordance with the requirements specified. Excavation near sensitive structures such as existing private features along the shoreline such as sheetpile walls and docks may require use of low ground pressure equipment or excavation around such features may have to be performed under restricted or limited access conditions immediately adjacent to the structure to avoid excessive surcharge loading on the structure.
- F. In no case shall the earth be plowed, scraped, or excavated by any means so near to the finished subgrade that it would disturb the finished subgrade. Hand excavation of the final 3 to 6 inches may be required to obtain a satisfactory, undisturbed subgrade, as required by the Construction Manager.
- G. Subgrade soils that become soft, loose, "quick," or otherwise unsatisfactory as a result of inadequate excavation, dewatering, or other construction methods shall be removed and replaced by structural fill or crushed stone fill, as required by the Construction Manager at the Contractor's expense.
- H. Clay and silt soils are particularly susceptible to disturbance due to construction operations. When excavation is to end in such soils, a smooth-edge bucket shall be used to excavate the last 1 foot of depth.
- I. No excavation shall end in organic soils, unless otherwise specified herein or directed by the Construction Manager. The Contractor shall remove the organic soils at the bottom of excavation and replace with crushed stone or compacted structural fill.
- J. If the material at the level of excavation bottom consists of fine sand, sand, silt, or soft earth, which may work into crushed stone (where required) notwithstanding effective drainage, the subgrade material shall be removed to the extent directed by the Construction Manager, and the crushed stone (as required) shall then be wrapped in filter fabric and be placed in 6-inch layers thoroughly compacted up to the normal grade of the required grade.



- K. The Contractor shall remove from excavations all materials which the Construction Manager deems unsuitable for backfilling.

### 3.02 GENERAL FILLING AND BACKFILLING PROCEDURES

- A. Fill and backfill materials shall be placed in lifts to suit the specified compaction requirements to the lines and grades required, making allowances for settlement and placement of cover materials (e.g., topsoil and sod). Soft spots or un-compacted areas shall be corrected.
- B. Fill and backfill materials shall not be placed on frozen surfaces or surfaces covered by snow or ice. Fill and backfill material shall be free of snow, ice, and frozen earth.
- C. Fill shall not be placed over organic soils (including peat and topsoil) and loose inorganic silt material. These materials shall be removed prior to fill placement as specified in this Specification, unless approved by the Construction Manager.
- D. Compaction in open areas may be accomplished by any of the following methods: compaction equipment, fully loaded 10-wheel trucks, tractor dozers weighing at least 30,000 pounds and operated at full speed, or heavy vibratory rollers. Compaction in confined areas (including areas within a 45° angle extending upward and outward from the base of a wall) and in areas where the use of large equipment is impractical, shall be accomplished by hand-operated vibratory equipment or mechanical tampers. Lift thickness shall not exceed 6 inches (measured before compaction) when hand-operated equipment is used.
- E. Fill and backfill shall not be placed and compacted when the materials are too wet to properly compact (i.e., the in-place moisture content of the soil at that time is no more than three percentage points above the optimum moisture content of that soil as determined by the laboratory test of the moisture-density relation appropriate to the specified level of compaction). At such times, Work shall be suspended until the previously placed and new materials have dried sufficiently to permit proper compaction.
- F. The Contractor shall notify the Construction Manager in advance of compaction activities and make prepared subgrade surfaces available to the Construction Manager for observation and testing.
- G. The method and degree of compacting backfill as directed by the Construction Manager will be governed by the type of material compacted.
- H. Dust-control measures shall be employed at all times.

### 3.03 COMPACTION

- A. Backfill for the temporary excavation behind the existing sheetpile at Stanton Road shall be placed in layers having a maximum thickness of 8 inches as measured before compaction. Backfill shall be compacted to at least 95% of maximum dry density determined by the ASTM D1557 by methods approved by the Construction Manager.

### 3.04 RESTORING EXCAVATION

- A. Where the excavation occurs adjacent to paved streets, in shoulders, sidewalks, or in cross-country areas, the Contractor shall thoroughly consolidate the backfill and shall maintain the surface as the Work progresses. If settlement takes place, the Contractor shall immediately deposit additional fill to restore the level of the ground.

- B. The surface of any driveway or any other area that is disturbed by the excavation and is not a part of the paved road shall be restored to a condition at least equal to that existing before Work began.
- C. In sections where the excavation passes through grassed areas, and at the Contractor's own expense, the Contractor shall remove and replace the sod, or loam and seed the surface to the satisfaction of the Construction Manager.
- D. In sections where the excavation passes through landscaped areas, the Contractor shall, at their own expense, remove and replace the topsoil, mulch, or other material to the satisfaction of the Construction Manager.

### 3.05 GRADING

- A. Grading shall be performed to the lines and grades shown on the Drawings and otherwise as directed by the Construction Manager and shall be performed in such a manner that the requirements for formation of grades can be followed. All objectionable material encountered within the limits indicated shall be removed and disposed of. Subgrades shall be completely and continuously drained and dewatered throughout the grading process. The Contractor shall install temporary drains, drainage ditches, and the like to intercept or divert surface water that may affect the execution or condition of grading work.
- B. If at the time of grading it is not possible to place any material in its proper section of the Work, it shall be stockpiled in approved areas for later use. No extra payment will be made for the stockpiling or double handling of excavated material.
- C. The Construction Manager reserves the right to make minor adjustments or revisions in lines or grades if found necessary as the Work progresses, in order to obtain satisfactory construction.
- D. Stones or rock fragments larger than 4 inches in their greatest dimensions will not be permitted within the top 6 inches of the finished grade of fills.

**- END OF SECTION -**

**SECTION 31 23 23**

**CAPPING AND BACKFILLING**

**PART 1 – GENERAL**

**1.01 REFERENCED SECTIONS**

- A. Section 00 31 00 – Available Project Information
- B. Section 01 14 00 – Work Restrictions
- C. Section 01 31 00 – Project Management and Coordination
- D. Section 01 33 00 – Submittal Procedures
- E. Section 01 35 43 – Environmental Protection
- F. Section 01 40 00 – Contractor Quality Control
- G. Section 01 66 10 – Material Delivery, Storage, and Handling
- H. Section 01 72 00 – Decontamination of Equipment
- I. Section 02 21 00 – Surveys
- J. Section 35 02 00 – Marine Equipment and Marine Traffic Control
- K. Section 35 20 23 – Dredging
- L. Section 35 80 00 – Marine Resuspension Control

**1.02 REFERENCES**

- A. ASTM International (ASTM):
  - 1. ASTM C29 – Standard Test Method for Bulk Density ("Unit Weight") and Voids in Aggregate
  - 2. ASTM C88 – Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
  - 3. ASTM C127 – Standard Test Method for Density, Relative Density (Specific Gravity), and Absorption of Coarse Aggregate
  - 4. ASTM C128 – Standard Test Method for Relative Density (Specific Gravity) and Absorption of Fine Aggregate
  - 5. ASTM C131 – Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
  - 6. ASTM C136 – Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates

7. ASTM D2487 – Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
8. ASTM D2974 – Standard Test Method for Moisture, Ash and Organic Matter of Peat and Other Organic Soils
9. ASTM D854 – Standard Test Methods for Specific Gravity of Soil Solids by Water Pycnometer
10. ASTM D2216 – Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
11. ASTM D4254 – Standard Test Methods for Minimum Index Density and Unit Weight of Soils and Calculation of Relative Density
12. ASTM D4972 – Standard Test Method for pH of Soils
13. ASTM D6913 – Standard Test Methods for Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis
- B. U.S. Environmental Protection Agency (EPA) SW-846 – Test Method for Evaluating Solid Waste, Physical/Chemical Methods, Third Edition
- C. New York State Department of Environmental Conservation (NYSDEC), Division of Fish, Wildlife and Marine Resources, Bureau of Habitat; Screening and Assessment of Contaminated Sediment (NYSDEC 2014)
- D. New York State Department of Transportation (NYSDOT) Standard Specifications (US Customary Units)
- E. Sections 15, 19, and 20 of the Rivers and Harbors Appropriation Act of 1899 (33 U.S. Code 410 et seq.)
- F. U.S. Coast Guard (USCG) Regulations
- G. St. Lawrence Seaway System Regulations

#### 1.03 DESCRIPTION

- A. The Contractor shall furnish all labor, supervision, materials, tools, equipment, services, accessories, and appurtenances necessary for, or incidental to, the placement of backfill and cap materials within the Grasse River and excavated floodplain areas as shown on the Drawings and as described in the Specifications.
- B. The Contractor shall be responsible for sourcing and procuring the specified backfill and cap materials; transporting the backfill and cap materials to the Staging Area or other approved location; unloading and staging the backfill and cap materials; blending and mixing the backfill and cap materials with amendments as necessary to achieve specified requirements; loading and transporting backfill and cap materials to the locations of placement; placing the backfill and cap materials in accordance with the Drawings and Specifications; performing surveys in accordance with Section 02 21 00 – Surveys; and physical measurements (i.e., core samples and catch pans) to document cap layer thickness as described herein. The Contractor shall be responsible for all sampling and testing of backfill and cap materials to verify compliance with the specified requirements.

- C. The Contractor shall be responsible for placing backfill material in near shore dredged areas to return the near shore area to pre-construction grades in accordance with the Drawings and Specifications. Three main types of backfill material types are specified for use depending on location – Type A Backfill, Type B Backfill, and Type C Backfill. In addition, Type A Backfill (without topsoil amendment) shall be placed in certain dredged areas as shown on the Drawings, and Topsoil shall be placed in the upper 6 inches of areas designated for wetland vegetation planting (by others) as shown on the Drawings. In certain areas with elevated PCB concentrations, Type A Backfill and Type B Backfill will be amended with granular activated carbon (GAC) as described in Part 3.06.H.9.
- D. Certain portions of the dredged areas (e.g., where dredging extends into the adjacent upland area for slope stability) will not require backfill placement to restore pre-construction grades. In these areas, backfill shall be placed as described in the Specifications and as shown on the Drawings. As indicated on the Drawings, backfill placement will not be required in other portions of the Project Site; specifically, at the Border Patrol Marina near Transect 32.5 (T32.5).
- E. The Contractor shall be responsible for placing backfill material in excavated floodplain removal areas shown on the Drawings to return the excavated areas to pre-construction grades in accordance with the Drawings and Specifications.
- F. The Contractor shall be responsible for constructing caps over existing sediment in the main channel of the river in accordance with the Drawings and Specifications. A three-layer armored cap is required between Transect 1 (T1) and T19, a two-layer modified armored cap is required between T19 and T21, and a two-layer unarmored cap is required between T21 and T72 as shown on the Drawings. The Contractor shall also be responsible for placing a habitat material layer over the armored cap and the modified armored cap between T4 and T19.5.
- G. In certain portions of the river with existing steep slopes, Slope Grading Fill will be required prior to cap placement as described in the Specifications and as shown on the Drawings and based on the electronic Slope Grading Fill XYZ Files.
- H. In certain portions of the river underlain by soft clay, staged construction of the caps shall be required as described in the Specifications and as shown on the Drawings.
- I. The Contractor shall be responsible for placing cap materials in certain portions of the main channel designated on the Drawings as part of pilot testing for the placement of Armored and Modified Armored Caps. Monitoring of the pilot test areas will be performed by others.
- J. The Contractor shall implement best management practices (BMPs), environmental controls, and other measures to maintain compliance with environmental and health and safety-based monitoring criteria.

#### 1.04 SLOPE GRADING FILL FILES

- A. Slope Grading Fill XYZ Files are electronic data point files that specify the horizontal (X and Y) and vertical (Z) extent of Slope Grading Fill to be placed in designated areas shown on the Drawings. The electronic data files contain X, Y, and Z values on a 1-foot by 1-foot basis within the footprint of the Slope Grading Fill placement areas.
- B. The Slope Grading Fill XYZ Files may be revised to account for updated pre-construction bathymetric survey data or to address other changes during final design. Revised Slope Grading Fill XYZ Files, if any, will be issued to the Contractor by the Construction Manager prior to the start of cap placement.

1.05 SUBMITTALS

The Contractor shall submit the following in accordance with Section 01 33 00 – Submittal Procedures:

A. Pre-Construction

1. Backfilling and Capping Plan. For each construction season, the Contractor shall submit an annual Backfilling and Capping Plan to the Construction Manager for review and approval. The Backfilling and Capping Plan shall be updated each year to include details for the Work planned for the upcoming construction season. The Backfilling and Capping Plan must be approved by the Construction Manager prior to initiating any work related to backfilling or capping. At a minimum, each Backfilling and Capping Plan shall include the following items:
  - a. Figures showing the proposed layout and extent for each Cap Certification Unit (CCU) along with tables summarizing the areal extent of each CCU.
  - b. Figures showing the locations, arrangement, and layout of material staging areas, material blending areas, loading areas, equipment locations, and any other details pertinent to the material management operations.
  - c. Details for any proposed modifications to the Staging Area, including details for preparing the cap and backfill loading area.
  - d. Identification and locations of all backfill and cap material sources along with schedule for procurement, testing, and delivery. The Contractor shall include written confirmation that the materials meet the required criteria per this Specification (see Part 1.05.A.3 and Part 3.03). Evidence of required permits and other necessary approvals shall be provided. If such approvals are not in place, the process and schedule for obtaining permits and other approvals shall be provided.
  - e. Details for material transport and stockpiling, which shall include, at a minimum, transportation methods, schedules, and routing; locations of material stockpiling areas; and details for the equipment that will be used (e.g., trucks, cranes, conveyors, loaders, barges, tow or tug boats, support vessels, and containers) to transport backfill and cap materials from the source locations to the Staging Area (or other approved location) and from the staging location to the locations of placement.
  - f. Procedures, means, and methods for preparing, blending, mixing, and staging of Chemical Isolation Layer material (sand and granular activated carbon [GAC]). The plan shall include a description of how the Contractor will ensure that the final in-place mixed ratio and homogeneity requirements are achieved. At a minimum, the Contractor shall provide the estimated volume and weight of each type of material to be blended and describe how the mix ratios will be optimized in the field.
  - g. Procedures, means, and methods for preparing, blending, mixing, and staging of Type A Backfill with Topsoil and Habitat Layer Material with Wood Organic Material. The plan shall include a description of how the Contractor will ensure that the mixed ratio and homogeneity requirements are achieved. At a minimum, the Contractor shall provide the estimated volume and weight of each type of material to be blended (i.e., sand, sand and gravel, topsoil, and Wood Organic Material amendments) and describe how the mix ratios will be optimized in the field.

- h. A description of how the Contractor will provide for Construction Manager access to inspect and randomly test backfill or cap materials for compliance with the Specifications prior to and during the Work.
- i. A detailed description of means and methods for loading of cap and backfill materials onto barges.
- j. Procedures, means, and methods for placement of the backfill material and cap material, including details of the equipment to be used for material placement (e.g., cranes, conveyors, loaders, barges, tow or tug boats, support vessels, and containers), means of navigational positioning, sequencing, material placement techniques, and coordination with the Contractor's Dredge Plan as required by Section 35 20 23 – Dredging.
- k. Procedures, means, and methods to place backfill within areas designated as Dredge and Immediate Backfill Areas requiring Interval Dredging, as shown on the Drawings, within the duration and restrictions provided in Section 35 20 23 – Dredging.
- l. Schedule, procedures, means, and methods for the Steep Slope Armored Cap Staged Construction Pilot Test as described in Part 3.08.J.
- m. Schedule, procedures, means, and methods for test demonstration of the Armored Cap Staged Construction Pilot Tests as described in Part 3.08.K
- n. Procedures, means, and methods for backfilling shallow draft areas, including all areas where dredging is conducted up to the shoreline and any slopes that extend into the upland.
- o. Procedures, means, and methods for minimizing overplacement and achieving the specified thicknesses and elevations within tolerances as specified in this Specification.
- p. Procedures, means, and methods to verify proper backfill and cap location, layer thickness, and final grades. Procedures to verify proper lateral extent of placement and methods of survey control, material volume, or weight monitoring shall be described. The use of electronic positioning and associated software, including data deliverables, shall be described. Proposed physical measurement types, procedures, and frequencies to verify compliance with the specified cap layer thicknesses shall be described (e.g., core sampling and catch pan sampling). Proposed quality control information (e.g., material volume tracking, additional physical samples) to be generated throughout cap placement operations to provide feedback on equipment operations and as an additional line of evidence for cap layer placement.
- q. Procedures, means, and methods for the Backfill Placement Test to demonstrate the efficacy of material blending and placement methods in the first Dredge Management Unit (DMU) as described in Part 3.06.F.
- r. Procedures, means, and methods for placing and compacting backfill material placed in floodplain removal areas.
- s. Procedures, means, and methods for the Cap Placement Test to demonstrate the efficacy of material blending and placement methods in the first CCU as described in Part 3.08.H.

- t. A description of specific procedures to be used by the Contractor to verify proper placement of the Habitat Layer Material over the Armored Cap and Modified Armored cap between T4 and T19.5. The Contractor shall provide details and methodology to accurately track the quantity of material placed per unit area in accordance with the specified requirements.
  - u. A description of specific procedures to be used by the Contractor to verify proper placement of cap materials where caps with a 12-inch Chemical Isolation Layer are designated on the Drawings. The Contractor shall provide details and methodology to accurately track the quantity of material placed per unit area in accordance with the specified requirements.
  - v. Procedures, means, and methods, as well as BMPs that will be implemented to minimize sediment resuspension and turbidity during capping and backfill placement to comply with water quality requirements and meet the requirements of Section 01 35 43 – Environmental Protection.
  - w. A detailed description of the turbidity control systems to be employed during all backfilling operations and details how the turbidity control system will be arranged relative to the backfill placement equipment and material transport barges.
  - x. Estimated backfill and cap material placement production rates, including the estimated area and volume of material planned for each week and the estimated average hourly placement rate (in-place cubic yards per hour) for the equipment. Identify assumptions made for effective and non-effective time and lost time associated with weather-related delays.
  - y. Proposed approach and location(s) for deployment and inspection of equipment and personnel, including mobilization of equipment, barges, and other ancillary equipment, as well as daily deployment of personnel and vessels to verify soundness and water tightness and whether they are fit for duty in accordance with Section 01 14 00 – Work Restrictions and Section 35 02 00 – Marine Equipment and Marine Traffic Control.
  - z. A detailed schedule and description of the order in which the planned backfill and capping Work will be performed for each DMU and CCU accounting for survey verification and approval by the Construction Manager.
  - aa. Proposed approach for anchoring of all equipment and vessels in accordance with Section 35 02 00 – Marine Equipment and Marine Traffic Control.
  - bb. Proposed control measures to mitigate the potential for resuspension and downstream transport of contaminated sediment for any cap placement operations where downstream cap placement is proposed prior to completing at least the first layer of upstream cap placement.
2. Material specifications for the proposed GAC as well as manufacturer's written instructions on material handling and staging. Provide one 5-pound sample of the GAC material for inspection by the Construction Manager.
3. Borrow Source Characterization Reports
- a. The Contractor shall submit a Borrow Source Characterization Report for each source and each material type specified in Part 2. The Borrow Source Characterization Reports shall include the following:



- 1) The material source, including name, address, and contact information.
  - 2) A certification letter from the borrow source owner or operator certifying that the source is not from an industrial site or suspected to have been modified by the addition of manufactured chemicals and that the material does not contain oil or hazardous material as supported by test data to be provided with certification letter and a copy of applicable current permits and approvals.
  - 3) The results of testing as specified in Part 3.03 for all materials proposed from each source.
  - 4) Two 5-gallon buckets with samples of each type of backfill and cap material, including organic material amendments, for inspection by the Construction Manager.
4. Staged Construction Cap Pilot Test Work Plan: The Contractor shall submit a work plan to the Construction Manager for review and approval to include details for the Work planned for staged construction cap pilot tests described in Parts 3.08.J.2 and 3.08.K.2. This work plan must be approved by the Construction Manager prior to initiating any Work related to the staged construction cap pilot tests. At a minimum, the Staged Construction Cap Pilot Test Work Plan shall include the following items:
- a. Identification and locations of all cap material sources along with schedule for procurement, testing, and delivery. The Contractor shall include written confirmation that the materials meet the required criteria per this Specification (see Part 1.05.A.3 and Part 3.03).
  - b. Details for material transport and stockpiling of cap materials.
  - c. Procedures, means, and methods for preparing, blending, mixing, and staging of Chemical Isolation Layer material (sand and granular activated carbon [GAC]). The plan shall include a description of how the Contractor will ensure that the final in place mixed ratio and homogeneity requirements are achieved. At a minimum, the Contractor shall provide the estimated volume and weight of each type of material to be blended and describe how the mix ratios will be optimized in the field.
  - d. Procedures, means, and methods for loading and placement of the cap materials, including details of the equipment to be used, means of navigational positioning, sequencing, and material placement techniques.
  - e. Procedures, means, and methods for minimizing overplacement and achieving the specified thicknesses and elevations within tolerances as specified in this Specification.
  - f. Procedures, means, and methods, to verify proper backfill and cap location, layer thickness, and final grades. Procedures to verify proper lateral extent of placement and methods of survey control, material volume, or weight monitoring shall be described. The use of the electronic positioning and associated software, including data deliverables, shall be described.
  - g. Procedures, means, and methods, as well as BMPs that will be implemented to minimize sediment resuspension and turbidity during capping to comply with water quality requirements and meet the requirements of Section 01 35 43 – Environmental Protection.

- h. Details related to quality control inspections and surveys to be performed by the Contractor related to the staged construction cap pilot tests to comply with Section 01 40 00 – Contractor Quality Control.
  - i. A detailed schedule and sequence for implementing the staged construction cap pilot tests.
  - j. Proposed approach for anchoring of all equipment and vessels in accordance with Section 35 02 00 – Marine Equipment and Marine Traffic Control.
  - k. Proposed procedures, means, and methods to perform supplemental cap material sampling (e.g., core sampling and/or catch pan sampling) during placement to demonstrate compliance with the specified cap thicknesses.
5. Backfilling and Capping Plan Amendment: The Contractor shall submit an amendment to their Backfilling and Capping Plan to the Construction Manager for review and approval. At a minimum, Backfilling and Capping Plan Amendment shall include the following items:
- a. Procedures, means, and methods for preparing, blending, mixing, and staging of GAC-amended Type A Backfill and GAC-amended Type B Backfill material. The plan shall include a description of how the Contractor will ensure the homogeneity of the placed backfill materials. At a minimum, the Contractor shall provide the estimated volume and weight of each type of material to be blended and describe how the mix ratios will be measured and optimized in the field.
  - b. A description of the documentation to be prepared by the Contractor during implementation to verify that the amount of GAC meets minimum requirements specified for the GAC-amended Type A Backfill and GAC-amended Type B Backfill material. This shall include detailed daily records of the amounts of each type of material blended to produce the GAC-amended Type A Backfill and GAC-amended Type B Backfill material along with documentation of where the backfill material is placed.
  - c. A description of sampling and testing by the Contractor as described in Part 3.03.G.
  - d. A description of how the Contractor will provide the Construction Manager and its representatives with access to inspect and randomly test backfill materials for compliance with the Specifications prior to and during the Work.
  - e. Procedures, means, and methods for placement of the GAC-amended Type A Backfill and GAC-amended Type B Backfill material.

B. During Construction

- 1. Daily backfilling and capping reports. For each 24-hour period of backfilling and capping operations (midnight to midnight, local time), the Contractor shall prepare and submit a Daily Backfilling and Capping Report. The Daily Backfilling and Capping Reports may be included as a component of the Daily Activities Report described in Section 01 31 00 – Project Management and Coordination. These reports shall be submitted to the Construction Manager the day following the 24-hour period covered by the report. At a minimum, the report shall include the following:
  - a. Description of the backfill and capping Work activities.

- b. Description and details of the daily quality control checks of all equipment and positioning system sensors.
  - c. The stop and start station for each day's backfilling and capping.
  - d. Material Barge Trip Logs, including the barge identification; DMUs or CCUs where the backfill and cap materials were placed; types and estimated quantities of materials transported; barge draft (empty and loaded); and loading and unloading times.
  - e. Copies of the tare weight slips of trucks delivering backfill and cap materials to the Staging Area from offsite sources.
  - f. Estimated volume of stockpiled volumes at the Staging Area on any other project support areas.
  - g. A description of backfill and cap material blending operations, including estimated quantities of amendments used.
  - h. The estimated daily and cumulative volume of backfill and capping materials placed and the area covered by each material.
  - i. Daily export of XYZ files from the HYPACK System (or equivalent) and processed drawings in AutoCAD Civil 3D (2015) format or compatible Digital Terrain Model (DTM) of the survey to show the backfilling and capping progress for the day.
  - j. A summary of all surveys performed.
  - k. List of labor and equipment employed for backfilling and capping activities.
  - l. Equipment performance, maintenance, hours of downtime, and cause(s) of downtime.
  - m. Delays encountered and relevant details of each delay, such as the cause, resolution, and measures implemented to avoid similar delays in the future and to make up lost time if necessary.
- 2. Material testing results. The Contractor shall submit all material testing results as specified in Part 3.03.
  - 3. Survey results. The Contractor shall submit the results of backfill and cap verification surveys in accordance with Section 02 12 00 – Surveys.
  - 4. Habitat Layer Material. The Contractor shall submit all Habitat Layer Material placement documentation as required in Part 3.08.M.
  - 5. Twelve-inch-thick Chemical Isolation Layer Cap Area. The Contractor shall submit all placement documentation, as required in Part 3.08.O, where capping with a 12-inch-thick Chemical Isolation Layer is required.
  - 6. Cap pilot test demonstration records in accordance with Parts 3.08.J.3 and 3.08.K.3.
  - 7. Cap thickness physical measurement documentation. The Contractor shall submit documentation for physical measurements (i.e., core sampling and catch pans) conducted to verify compliance with the specified cap layer thicknesses.

8. Quality control cap placement documentation. The Contractor shall submit quality control documentation related to cap placement (e.g., material volume tracking, additional physical sample results).
9. Documentation to verify that the GAC content of the blended materials meets minimum requirements specified for the GAC-amended Type A Backfill and GAC-amended Type B Backfill material, including detailed daily records of the amounts of each type of material blended to produce the GAC-amended backfill materials along with documentation of where the backfill material is placed.

## PART 2 – PRODUCTS

### 2.01 GRANULAR MATERIALS

#### A. Type A Backfill

1. Type A Backfill shall consist of a sand and topsoil mixture that will be used in areas shown on the Drawings.
2. Type A Backfill shall have the following gradation (prior to amending with topsoil):

U.S. Sieve Size	Percent Passing (Dry Weight Basis)
No. 40	80 – 100%
No. 50	50 – 80%
No. 200	0 – 6%

3. Type A Backfill shall be produced by blending or mixing sand with topsoil at a ratio of 50% by volume of each material type. The material shall be blended to produce a homogeneous mixture.

#### B. Type A Backfill (Not Amended with Topsoil)

1. Type A Backfill (Not Amended with Topsoil) shall consist of a sand that will be used in areas shown on the Drawings.
2. Type A Backfill (Not Amended with Topsoil) shall have the following gradation:

U.S. Sieve Size	Percent Passing (Dry Weight Basis)
No. 40	80 – 100%
No. 50	50 – 80%
No. 200	0 – 6%

#### C. Type B Backfill

1. Type B Backfill shall be a sand and gravel mixture that will be used in areas shown on the Drawings.
2. Type B Backfill shall have the following gradation:

<b>U.S. Sieve Size</b>	<b>Percent Passing (Dry Weight Basis)</b>
2-inch	75 – 100%
No. 4	15 – 60%
No. 40	5 – 35%
No. 200	0 – 12%

**D. Type C Backfill**

1. Type C Backfill will be used for slope stabilization in backfill areas shown on the Drawings.
2. The grain size specification for this material shall be consistent with the NYSDOT crushed gravel specification for No. 4 Stone (703-0202; NYSDOT Standard Specifications) as listed below:

<b>U.S. Sieve Size</b>	<b>Percent Passing (Dry Weight Basis)</b>
4-inch	100%
3-inch	90 – 100%
2-inch	0 – 15%
No. 200	0 – 0.7%

**E. Wood Organic Material Amendments**

1. The Wood Organic Material shall meet the following criteria:
  - a. Shall be derived from native hardwood or softwood species.
  - b. Material shall include at least 50% by volume of leaves, young growth, or twigs.
  - c. Material shall be less than 1 inch in two dimensions and not exceed 4 inches in the greatest dimension, unless otherwise approved by the Construction Manager.
  - d. Shall be natural material
  - e. Shall not be from a chemically treated source
  - f. Material shall be free from sawdust and foreign materials (i.e., nails, plastic, etc.).
2. If necessary, Wood Organic Material shall be soaked to allow for placement within the blended material and to minimize differential settling patterns or loss of material.
3. Wood organic material may consist of wood pellets as long as the manufacturer provides documentation that the pellets contain at least 50% by volume of leaves, young growth, or twigs and that the pellets are not manufactured with any glues or binders.

**F. Topsoil**

1. Topsoil shall be imported from a naturally occurring source approved by the Construction Manager.

2. Topsoil shall be friable loam, neither heavy clay nor of a very light sandy nature.
3. Topsoil shall be reasonably free of roots or rocks larger than 1 inch, weeds, vegetation, and seeds of noxious weeds.
4. Topsoil shall have an acidity range (pH) between 5.5 to 7.5 in accordance with ASTM D4972.
5. Topsoil shall be free of unsuitable materials, including, but not limited to, the following:
  - a. Commercially or municipally produced organic waste, sewage sludge, or composted waste materials.
  - b. Frozen material or material containing snow or ice.
  - c. Trees, stumps, branches, roots, or other wood or lumber.
  - d. Wire, steel, cast iron, cans, drums, or other foreign material.
6. Topsoil shall contain a minimum pre-placement Total Organic Carbon (TOC) content of 2.0 percent (as determined by EPA SW-846 9060A Modified), unless otherwise approved by the Construction Manager.

G. Slope Grading Fill

1. The Slope Grading Fill shall have the following gradation:

<b>Particle Size or U.S. Sieve Size</b>	<b>Percent Passing (Dry Weight Basis)</b>
3-inch	100%
0.75-inch	80 – 100%
No. 4	60 – 90%
No. 10	40 – 80%
No. 40	20 – 50%
No. 200	0 – 10%

H. Chemical Isolation Layer (sand with GAC)

1. The Chemical Isolation Layer shall be a mixture of sand and GAC to achieve an in-place dry weight GAC content of 0.1% as described in Part 3.08.H.6.
2. The sand component of the Chemical Isolation Layer shall have the following gradation:

<b>U.S. Sieve Size</b>	<b>Percent Passing (Dry Weight Basis)</b>
No. 40	80 – 100%
No. 50	50 – 80%
No. 200	0 – 6%

3. The GAC component of the Chemical Isolation Layer shall meet the following criteria:

- a. The material shall be virgin condition.
  - b. The base material must be bituminous coal.
  - c. Steam shall be used as its activation method.
  - d. It shall have a minimum iodine number of 1,000 milligrams per gram (mg/g).
  - e. It shall have a maximum moisture of 2% by weight.
  - f. It shall have a minimum abrasion number of 75.
  - g. It shall have an effective size of 0.55 to 0.75 millimeters (mm).
  - h. It shall have a maximum uniformity coefficient of 1.9.
  - i. It shall be no more than 5% by weight greater than 12 mesh (1.7 mm).
  - j. It shall be no more than 4% by weight less than 40 mesh (0.42 mm).
4. The GAC shall be soaked or wetted as necessary to allow for placement within the blended material and to minimize differential settling patterns or excess loss of material.
- I. Coarse Chemical Isolation Layer (sand with GAC) – Main Channel Cap
1. The Coarse Chemical Isolation Layer shall be a mixture of sand and GAC to achieve an in-place dry weight GAC content of 0.1% as described in Part 3.08.H.6.
  2. The sand component of the Coarse Chemical Isolation Layer shall have the following gradation:

<b>U.S. Sieve Size</b>	<b>Percent Passing (Dry Weight Basis)</b>
3-inch	100%
0.75-inch	80 – 100%
No. 4	60 – 90%
No. 10	40 – 80%
No. 40	20 – 50%
No. 200	0 – 10%

3. The GAC component of the Chemical Isolation Layer shall meet the criteria listed in Part 2.01.H.3.
4. In the areas indicated on the Drawings, Coarse Chemical Isolation Layer material is required in lieu of the standard Chemical Isolation Layer material (Part 2.01.H) as part of cap construction.
5. With the sole exception of material gradation requirements, the Coarse Chemical Isolation Layer shall be subject to all the same requirements specified for the Chemical Isolation Layer.

J. Gravel Filter Layer

1. Gravel Filter Layer shall have the following gradation:

Particle Size or U.S. Sieve Size	Percent Passing (Dry Weight Basis)
4-inch	100%
1.25-inch	50 – 100%
No. 12	10 – 35%
No. 200	0 – 5%

K. Armor Layer

1. Armor Layer stone shall conform to the requirements of NYSDOT specification for Light Stone Filling (733.2102, NYSDOT Standard Specifications) as listed below:

Stone Size	Percent of Total by Weight
Lighter than 50 kg	90 – 100
Larger than 150 mm	50 – 100
Smaller than 12 mm	0 – 10

L. Modified Armor Layer

1. The Modified Armor Layer shall have the following gradation:

Particle Size or U.S. Sieve Size	Percent Passing (Dry Weight Basis)
3 -inch	100%
1.5-inch	65 – 90%
No. 4	20 – 50%
No. 10	15 – 35%
No. 40	5 – 20%
No. 200	0 - 5%

M. Habitat Layer Material

1. Habitat Layer Material shall be a mixture of sand and Wood Organic Material to achieve an organic content of 1% (ASTM D2974) prior to placement.
2. The sand component of the Habitat Layer Material shall have the following gradation:

U.S. Sieve Size	Percent Passing (Dry Weight Basis)
No. 40	80 – 100%
No. 50	50 – 80%
No. 200	0 – 6%



N. GAC-Amended Type A Backfill

1. GAC-amended Type A Backfill shall be a mixture of sand, topsoil, and GAC to achieve a minimum pre-placement dry weight GAC content of 0.1% as described in Part 3.06.H.9.
2. GAC-amended Type A Backfill shall have the following gradation (prior to amending with topsoil or GAC):

U.S. Sieve Size	Percent Passing (Dry Weight Basis)
No. 40	80 – 100%
No. 50	50 – 80%
No. 200	0 – 6%

3. GAC-amended Type A Backfill shall be produced by blending or mixing sand with topsoil at a ratio of 50% by volume of each material type, and GAC to achieve a minimum pre-placement dry weight GAC content of 0.1%. The material shall be blended to produce a homogeneous mixture.
4. The GAC component of the GAC-amended Type A Backfill shall meet the following criteria:
  - a. The material shall be virgin condition.
  - b. The base material must be bituminous coal.
  - c. Steam shall be used as its activation method.
  - d. It shall have a minimum iodine number of 1,000 milligrams per gram (mg/g).
  - e. It shall have a maximum moisture of 2% by weight.
  - f. It shall have a minimum abrasion number of 75.
  - g. It shall have an effective size of 0.55 to 0.75 millimeters (mm).
  - h. It shall have a maximum uniformity coefficient of 1.9.
  - i. It shall be no more than 5% by weight greater than 12 mesh (1.7 mm).
  - j. It shall be no more than 4% by weight less than 40 mesh (0.42 mm).
5. The GAC shall be soaked or wetted as necessary to allow for placement within the blended material and to minimize differential settling patterns or excess loss of material.

O. GAC-Amended Type B Backfill

1. GAC-Amended Type B Backfill shall be a mixture of sand, gravel, and GAC to achieve a minimum pre-placement dry weight GAC content of 0.1% as described in Part 3.06.H.9.

2. GAC-Amended Type B Backfill shall have the following gradation (prior to amending with GAC):

<b>U.S. Sieve Size</b>	<b>Percent Passing (Dry Weight Basis)</b>
2-inch	75 – 100%
No. 4	15 – 60%
No. 40	5 – 35%
No. 200	0 – 12%

3. GAC-amended Type B Backfill shall be produced by blending or mixing sand/gravel with GAC to achieve a minimum pre-placement dry weight GAC content of 0.1%. The material shall be blended to produce a homogeneous mixture.
4. The GAC component of the GAC-amended Type B Backfill shall meet the criteria listed in Part 2.01.N.4 (the same as the GAC-amended Type A Backfill).
5. The GAC shall be soaked or wetted as necessary to allow for placement within the blended material and to minimize differential settling patterns or excess loss of material.

### **PART 3 – EXECUTION**

#### **3.01 GENERAL**

- A. The Contractor shall not proceed with backfill or cap placement until the Construction Manager has provided the Contractor with written notification that Work may commence.
- B. The Contractor shall place cap materials in accordance with the thicknesses and quality requirements specified herein and as shown on the Drawings.
- C. Backfilling and Capping Sequence Requirements
- Backfill placement in a DMU shall not proceed until completion and approval by the Construction Manager of all dredging in the DMU, with the exception of areas designated for Interval Dredging (Dredge and Immediate Backfill). Backfill placement in areas designated for Interval Dredging (Dredge and Immediate Backfill) shall be completed in accordance with Specification Section 35 20 23, Part 3.06.S.
  - The Contractor shall sequence the Work such that no cap materials (excluding Slope Grading Fill and materials placed as part of the staged construction pilot tests) are placed in an area prior to the completion and approval by the Construction Manager of all upstream dredging and backfilling.
  - The Contractor shall sequence the Work such that no cap materials (excluding Slope Grading Fill) are placed downstream of T21 until all of the following conditions are met:
    - Placement of the Chemical Isolation Layer and Gravel Filter Layer in T16 through T19 must be completed and approved by the Construction Manager prior to commencing cap placement downstream of T21.
    - Placement of the Chemical Isolation Layer in T19 through T21 must be completed and approved by the Construction Manager prior to commencing cap placement downstream of T21.

- c. Placement of the Armor Layer in T16 through T19 must be completed prior to or in the same construction season when cap placement downstream of T21 commences.
  - d. Placement of the Modified Armor Layer in T19 through T21 must be completed prior to or in the same construction season when cap placement downstream of T21 commences.
  - e. The Construction Manager must provide written approval prior to commencing cap placement in downstream of T21.
4. The Contractor shall sequence the Work such that no cap materials (excluding Slope Grading Fill) are placed in an area prior to the completion and approval by the Construction Manager of Chemical Isolation Layer placement in all designated upstream capping areas, except as noted below.
- a. Subject to approval by the Construction Manager, the Contractor may place cap materials between T6 and T21 before the biological window (i.e., June 15) and before placing cap materials between T1 through T6, provided that the Contractor implements control measures to mitigate the potential for resuspension and downstream transport of contaminated sediment during subsequent upstream cap placement operations. Such control measures may include the use of specialized placement equipment that minimizes the force of material as it is placed on the sediment bed, use of turbidity curtains or air curtains to minimize the downstream transport of potential resuspension, or conducting additional water column monitoring.
    - 1) The Contractor's proposed control measures to mitigate the potential for resuspension and downstream transport of contaminated sediment during subsequent upstream cap placement operations shall be submitted and approved by the Construction Manager prior to commencing cap placement following this sequence.
    - 2) If cap placement operations begin downstream of T6 before completing Chemical Isolation Layer placement between T1 through T6, the Contractor shall relocate cap placement operations to T1 once the biological window expires (i.e., June 15).
    - 3) If cap placement operations begin downstream of T6 before completing Chemical Isolation Layer placement between T1 through T6, the Contractor shall complete all cap layers upstream of T6 (including the armor layer) in the same construction season when cap placement commences downstream.
  - b. Subject to approval by the Construction Manager, the Contractor may place Chemical Isolation Layer in T19 through T21 before completing the Chemical Isolation Layer in all upstream areas, provided that the Contractor implements control measures to mitigate the potential for resuspension and downstream transport of contaminated sediment during subsequent upstream cap placement operations. Such control measures may include the use of specialized placement equipment that minimizes the force of material as it is placed on the sediment bed, use of turbidity curtains or air curtains to minimize the downstream transport of potential resuspension, or conducting additional water column monitoring.
    - 1) The Contractor's proposed control measures to mitigate the potential for resuspension and downstream transport of contaminated sediment during subsequent upstream cap placement operations shall be submitted and approved by the Construction Manager prior to commencing cap placement following this sequence.

- 2) In areas not subject to staged construction, if cap placement operations begin between T19 and T21 before Chemical Isolation Layer placement is complete in all upstream areas, the Contractor shall complete all cap layers upstream of T19 (including the armor layer) prior to or in the same construction season when cap placement commences between T19 and T21.
  - 3) In areas subject to staged construction, if cap placement operations begin between T19 and T21 before Chemical Isolation Layer placement is complete in all upstream areas, the Contractor shall complete the Chemical Isolation Layer and Gravel Filter Layer upstream of T19 prior to or in the same construction season when cap placement commences between T19 and T21.
- c. Subject to approval by the Construction Manager, the Contractor may place Chemical Isolation Layer downstream of T21 before completing the Chemical Isolation Layer in all upstream areas, while concurrently placing caps in upstream areas, only if all of the following conditions are maintained.
- 1) The Contractor shall comply with all sequence requirements listed in Part 3.01.C.3.
  - 2) The Contractor shall implement control measures to mitigate the potential for resuspension and downstream transport of contaminated sediment during subsequent upstream cap placement operations (i.e., controlled placement, turbidity control, or monitoring as described above). The Contractor's proposed control measures to mitigate the potential for resuspension and downstream transport of contaminated sediment during subsequent upstream cap placement operations shall be submitted and approved by the Construction Manager prior to commencing cap placement following this sequence.
5. With the sole exception of caps in the staged construction cap placement areas shown on the Drawings, the Contractor shall schedule the Work such that placement of all cap layers can be completed and approved prior to winter shutdown in each season. No cap areas, other than staged construction cap placement areas, shall be left incomplete over a winter season.
6. The Contractor shall sequence the Work such that within Armored Cap staged construction areas, at least the Chemical Isolation Layer and the Gravel Filter Layer can be completed and approved prior to winter shutdown in each season. No Armored Cap staged construction areas shall be left with Chemical Isolation Layer material exposed over a winter season.
7. Placement of Slope Grading Fill may proceed downstream independent of other capping or dredging activities (i.e., upstream capping and dredging activities do not need to be completed before downstream placement of Slope Grading Fill). The timing of placement of cap layers overlying the Slope Grading Fill shall be subject to all other requirements of this Specification and the Drawings.
8. The Contractor shall sequence the Work such that, within Modified Armored Cap staged construction areas (T19 through T21), the Chemical Isolation Layer and Modified Armor Layer can be completed and approved prior to winter shutdown. No Modified Armored Cap areas shall be left with Chemical Isolation Layer material exposed over a winter season.
- D. The Contractor shall calibrate, maintain, and operate the truck scale at the Staging Area to enable accurate documentation. The truck scale shall be calibrated monthly or as required to ensure accuracy. The calibration procedure shall be documented, and the documentation submitted to the Construction Manager.

- E. Materials delivered to the Project Site shall be weighed on certified scales at the source location or at the Staging Area. The Contractor shall provide copies of weight tickets for all backfill and cap materials transported to the Project Site. Weight tickets shall indicate the weight, time, and date of weighing for all truck loads.
- F. The Contractor shall stockpile backfill and cap materials at the Project Site in sufficient quantities to meet schedule requirements.
- G. The Contractor shall be responsible for delivery to the Project Site of all materials and equipment necessary to perform the Work and shall pay all freight and handling charges for same. The Contractor shall coordinate with the Construction Manager for required procedures associated with deliveries to the Staging Area, including the use of truck scales, truck wash facilities, entry and exit procedures, and traffic flow patterns.
- H. The Contractor shall provide for temporary onsite stockpiling and staging of backfill and cap materials. The Contractor shall comply with the requirements in Section 01 66 10 – Material Delivery, Storage, and Handling, as well as the following:
  - 1. Cap and backfill materials shall be segregated from any contaminated areas. Temporary stockpiling of imported materials shall not be in any Contaminated Material processing or staging area.
  - 2. The Contractor shall construct and maintain stockpiles so they are tidy, well drained, free of foreign materials, free of standing surface water, and of adequate bearing capacity to support the weight of materials placed thereon.
  - 3. The Contractor shall separate differing materials with substantial dividers or stockpile them apart to prevent mixing.
  - 4. All material stockpiles shall be labeled with a sign to indicate the material type.
  - 5. The Contractor shall install and maintain erosion control measures per Section 01 35 43 – Environmental Protection.
  - 6. All unloading, storing, and loading shall be the responsibility of the Contractor. The Contractor shall protect all environmental resources, including dust control to protect air quality, in accordance with Section 01 35 43 – Environmental Protection.
  - 7. The Contractor shall follow the manufacturer's specifications and instructions for storing GAC. GAC shall be suitably packaged during transportation and storage to isolate the material from the environment. The Contractor shall coordinate with the Construction Manager to allow the Construction Manager to conduct a visual inspection of GAC during unloading and staging to identify if any packaging has been damaged. Material in damaged packaging shall be marked and further inspected for product integrity. The Contractor shall handle GAC in accordance with the manufacturer's instructions.
- I. The Contractor shall remove and dispose of rejected materials as directed by the Construction Manager at no additional cost to the Company.
- J. Areas for backfill and cap placement must be accessed from the water. No use of onshore areas is permitted unless designated on the Drawings or approved in writing by the Construction Manager.
- K. The Contractor shall implement measures to prevent soil and aggregate materials from being misplaced on land or in the waterway during material delivery, storage, and loading and

unloading. The Contractor shall use spill plates and other approved equipment or controls to prevent the loss of materials when loading and offloading.

- L. Barges must be loaded and unloaded such that the load within the barge is evenly distributed and allows for a minimum of 1-foot clearance between the hull and river bottom.
- M. If multiple types of material are transported by the same barge, separate the materials with a divider to prevent mixing.
- N. The Contractor shall manage vessels in accordance with Section 35 02 00 – Marine Equipment and Marine Traffic Control and USCG and St. Lawrence Seaway System regulations.
- O. The Contractor shall provide the Construction Manager with access at all times for inspection and testing of the import materials at source(s), material stockpiles, and vessels or vehicles loaded with materials.
- P. The Contractor shall blend, mix, and handle materials as necessary to meet the material requirements specified in Part 2 for the Type A Backfill, Chemical Isolation Layer, Coarse Chemical Isolation Layer, and Habitat Layer Material. The blending and mixing operation shall be performed in such a manner that each resulting material type is thoroughly homogenized. The Contractor shall implement means and methods to ensure that proper mix ratios are achieved and to produce documentation daily, or as otherwise directed by the Construction Manager, demonstrating compliance with the specified requirements. The Contractor shall continuously monitor and test, as necessary as part of quality control, the blending operations to ensure full compliance with the material specifications and make any necessary adjustments to optimize operations. Blending and mixing operations shall be performed using a suitable mixing device and equipment to achieve the specified requirements. Mixing solely using conventional earth-moving equipment (e.g., an excavator bucket) shall not be allowed.
- Q. The Contractor shall review geotechnical properties of the existing sediment (see Section 00 31 00 – Available Project Information) and implement measures, as needed, to minimize mixing of underlying sediment with the caps to limit cap-induced displacement of underlying materials.
- R. The Contractor shall use placement methods that minimize resuspension of bottom sediments to minimize mixing of bottom sediments with backfill and cap materials and minimize the downstream loss of backfill and cap materials during placement.
- S. The Contractor shall implement procedures and BMPs that minimize resuspension of bottom sediments and generation of turbidity during backfill and cap material placement to comply with water quality requirements and the requirements of Section 01 35 43 – Environmental Protection. The Contractor shall provide, deploy, and keep operational a resuspension control system(s) during near shore backfill placement operations in accordance with Section 35 80 00 – Marine Resuspension Controls. BMPs shall be implemented during placement of backfill and cap material placement, which may include the following:
  - 1. Placing backfill and cap material with an enclosed bucket.
  - 2. Reducing the fall height while placing material.
  - 3. Modifying the discharge rate, angle, or other parameters for hydraulic slurry or mechanical broadcast systems.
  - 4. Reducing cycle times while placing material.

5. Controlling the rate of material placement.
  6. Not performing excessive and rapid movement of the equipment.
  7. Conducting vessel operations in a manner that minimizes potential resuspension due to vessel propeller wash.
- T. Underwater stockpiling and underwater dragging or re-handling of cap materials are prohibited.

### 3.02 SOURCE AND MATERIAL QUALITY

- A. Materials shall not be obtained from an industrial site or suspected to have been modified by the addition of manufactured chemicals or petroleum products.
- B. Imported materials must be free of chemical contamination, below the specified acceptance criteria, and approved by the Construction Manager prior to delivery to the Project Site based on chemical characterization testing performed in accordance with Part 3.03. All imported backfill and cap materials shall have no detectable organic chemicals, with the exception of acetone which will have a compliance limit of 0.2 mg/kg, and the concentration of inorganics shall be less than the site-specific criteria listed in Table 1, subject to approval by the Construction Manager. Laboratory detection limits shall be less than specified criteria. Non-detects for organic chemicals shall be reported against the reporting limit.

**Table 1: Site-Specific Inorganic Criteria**

<b>Parameter</b>	<b>Site-Specific Inorganic Criteria milligrams per kilogram (mg/kg)</b>
Antimony	2
Arsenic	13
Barium	350
Beryllium	7.2
Cadmium	2.5
Copper	16
Iron	20,000
Lead	31
Manganese	600
Mercury	0.18
Nickel	16
Selenium	3.9
Silver	1
Zinc	109
Cyanide	27

- C. The Construction Manager may collect samples and conduct testing for quality assurance purposes.
- D. The Contractor shall inform the Construction Manager of proposed material sources and submit Borrow Source Characterization Reports at least 4 weeks prior to scheduled delivery of materials to the Project Site to verify the specified physical properties, chemical properties, and gradations.
  1. The Contractor shall provide the Construction Manager with the ability to conduct an inspection of the proposed sources.

2. If materials from any proposed source do not meet or cannot reasonably be processed to meet specified requirements, the Contractor shall locate and identify an alternative source or sources.
  3. Acceptance of material or a source shall not preclude future rejection by the Construction Manager if the material fails to conform to the specified requirements, lacks uniformity, or if its field performance is found to be unsatisfactory.
- E. Prior to approval of material sources, the Construction Manager reserves the right to visit each material source and conduct visual observation of the materials proposed for use. The Contractor shall coordinate access with the material sources for the Construction Manager to perform visits.
- F. The Construction Manager reserves the right to undertake independent investigations and assessments when necessary, including tests other than the tests prescribed herein, to verify that the materials comply with the specified requirements. Any additional tests by the Construction Manager will be performed at the expense of the Company.
- G. The Contractor shall implement measures to ensure any and all materials meet the requirements specified herein at no additional cost to the Company.
- H. The Contractor is solely responsible for ensuring that the selected material sources are able to meet the delivery schedule to produce material of the required quality and in sufficient quantity for the project. If the Contractor is unable to obtain a sufficient amount of acceptable material from an approved source to meet the progress of construction, the Contractor shall identify and obtain Construction Manager approval for an alternate source or sources. All costs incurred due to change of material sources, including sampling and testing requirements, shall be borne by the Contractor. In addition, no extension of project schedule milestones shall be allowed due to change of material sources.
- I. The Contractor shall inform the Construction Manager of any unacceptable conditions immediately upon discovery.
- J. The Contractor shall conduct material testing in accordance with Part 3.03. Materials shall meet the physical requirements specified in Part 2 and the chemical characterization criteria specified in Part 3.02.B. The Contractor shall be responsible for maintaining gradations as specified. Materials that do not meet gradation or chemical characterization requirements as specified herein will be rejected and no payment will be made regardless of any general or provisional acceptance of materials from a stockpile or borrow source.
1. Pre-construction testing shall be performed for each material type and for each material source. Pre-construction testing results shall be submitted to the Construction Manager with identification of the proposed material sources. Pre-construction physical testing shall be performed for each specified parameter.
  2. In addition to pre-construction tests, tests shall be conducted as required by Part 3.03 based on the quantity of material delivered to the Project Site or at the direction of the Construction Manager if material characteristics are visibly different.
  3. Prior to submitting material test results, the Contractor shall confirm all necessary material testing documentation is provided and all material testing results meet the specified requirements. The Construction Manager will endeavor to respond to material testing submittals within 2 days.



4. Each borrow source material sample collected for chemical characterization testing shall be screened by the Contractor using a photoionization detector (PID) as described in USEPA Test Method 3815 to verify the materials do not contain elevated levels of volatile organic vapors. The Contractor shall provide the results of PID screening together with the chemical characterization testing results.
- K. The final approval of sources for all material will be at the discretion of the Construction Manager. The Construction Manager has the authority for the approval or rejection of the suitability of all materials. Any proposed change in source shall require approval of the Construction Manager.
- L. The Contractor shall visually inspect imported materials upon delivery. Imported materials shall be inspected for the presence of foreign, recycled, or reprocessed material. The Construction Manager may, at any and all times, perform an independent inspection of the imported materials. The Construction Manager may also, at any and all times, conduct screening using a PID to verify the materials do not contain elevated levels of volatile organic vapors. Imported materials may be rejected if identified as substandard or if test results show it to be substandard. Imported materials may be segregated for testing based on appearance or odor. The Construction Manager reserves the right to request that the Contractor test the segregated materials according to designated procedures at the Construction Manager's discretion.

### 3.03 MATERIAL TESTING

- A. The Contractor shall furnish all labor, materials, tools, supervision, and transportation necessary to perform materials testing and analysis to meet the testing requirements as specified herein. The Contractor shall comply with all testing requirements (geotechnical, chemical, or other) with a specified frequency based on the quantity delivered to the Project Site.
- B. Sampling for testing of physical and chemical quality of the imported materials shall be performed at the source location prior to shipment to the Project Site unless otherwise approved by the Construction Manager. For material types that required blending of materials (i.e., Type A Backfill, Chemical Isolation Layer), testing for chemical parameters may be performed on the source materials before blending, except where sampling of blended materials is required specified elsewhere.
- C. Chemical Isolation Layer, Coarse Chemical Isolation Layer, Type A Backfill, Type A Backfill (Not Amended with Topsoil), Type B Backfill, Habitat Layer Material, Sloping Grading Fill, Gravel Filter Layer, Modified Armor Layer, Topsoil, and other imported granular materials as directed by the Construction Manager:
  1. One sample per 20,000 tons from each distinct source shall be submitted for the following chemical analyses. Testing shall follow the most recent versions of each method. At a minimum, samples of cap and backfill materials that require chemical testing shall be analyzed for the parameters listed in Table 375-6.8(a) under 6NYCRR Part 375-6.8(a). Proposed analytical reporting limits should be included in the Contractor's Contractor Quality Control Plan (CQCP) for review and approval by the Construction Manager. Additional analytical results shall be submitted for these analyses if the source of a material changes or as otherwise directed by the Construction Manager. The results shall be approved by the Construction Manager prior to material transport to the Project Site.
    - a. Target Compound List (TCL) volatile organic compounds (VOCs; EPA SW-846 Method 8260C) – Samples for volatile analysis shall be collected in accordance with EPA SW-826 Method 5035

- b. TCL semivolatile organic compounds (SVOCs; EPA SW-846 Method 8270D)
  - c. Pesticides (EPA SW-846 Method 8081B)
  - d. Polychlorinated biphenyls (PCBs; EPA SW-846 Method 8082A)
  - e. Herbicides (EPA SW-846 Method 8151A)
  - f. Target Analyte List (TAL) metals (EPA SW-846 Method 6010C/6020A/7471B)
  - g. Cyanide (EPA SW-846 Method 9012B)
  - h. TOC (EPA SW-846 9060A Modified) (for Topsoil, Chemical Isolation Layer, and Coarse Chemical Isolation Layer materials only)
- 2. One sample shall be submitted for TOC (EPA SW-846 9060A Modified) per 10,000 tons of the blended Type A Backfill (blended sand and topsoil mixture).
  - 3. One sample shall be submitted for organic content (ASTM D2974) per 10,000 tons of blended Habitat Layer Material (blended sand and Wood Organic Material Mixture).
  - 4. Representative samples from each distinct source (excluding Topsoil) shall be submitted for geotechnical testing at the frequencies specified below. The results shall be approved by the Construction Manager prior to material transport to the Project Site.
    - a. Grain size distribution (ASTM D6913 or ASTM C136); one sample per 10,000 tons
    - b. In situ moisture content (ASTM D2216); one sample per 10,000 tons
    - c. Weight per unit volume of uncompacted materials (ASTM D4254 or equivalent); one sample per 35,000 tons
    - d. Particle specific gravity (ASTM D854, ASTM C128, or ASTM C127, depending on particle size); one sample per 35,000 tons
  - 5. One sample shall be submitted for TOC (EPA SW-846 9060A Modified) per 5,000 tons of Topsoil placed in areas designated for wetland planting (plantings to be performed by others).
- D. Armor Layer and Type C Backfill
- 1. A representative sample from each distinct source shall be submitted for the following analyses for every 10,000 tons delivered to the Project Site, unless otherwise noted below. The results shall be approved by the Construction Manager prior to material transport to the Project Site.
    - a. Grain size distribution (ASTM D6913, ASTM C136, or alternate approved by the Construction Manager)
    - b. Los Angeles abrasion and impact testing (ASTM C131)
    - c. Sodium Sulfate Test for Soundness (ASTM C88)

- d. Weight per unit volume of uncompacted materials (ASTM D4254, ASTM C29 modified as described below, or equivalent)
  - 1) When testing unit weight using ASTM C29, do not oven dry the sample during sample preparation. Conduct the test with a wet or moist sample such that the weight per unit volume will be in its stockpiled state. Calculated bulk density as moist bulk density.
- e. pH (EPA SW-846 9045D)

E. Chemical Isolation Layer Sand with GAC

- 1. The Contractor shall sample the blended Chemical Isolation Layer (sand with GAC).
- 2. Grab samples shall be collected from the stockpiled mixture for analysis at a frequency of one sample per 5,000 tons for the entire quantity of material and submitted to the laboratory for analysis.
- 3. Samples shall be analyzed for TOC (EPA SW-846 9060 Modified).
- 4. Samples shall also be submitted to the Construction Manager for dry weight GAC content analysis. It is generally expected that the Construction Manager will provide results of this GAC testing to the Contractor within 3 calendar days after sample receipt.

F. Laboratory Testing Requirements

- 1. All material testing shall be performed by an independent and certified laboratory. The Contractor shall employ and pay for services of an independent laboratory authorized to operate in the New York State.
- 2. The laboratory shall have current National Environmental Laboratory Accreditation Program (NELAP) and New York State Environmental Laboratory Approval Program (ELAP) certification for specific methods they are performing from a recognized state or federal laboratory accreditation program.
- 3. Re-testing or re-inspection required because of non-conformance to specified requirements shall be performed by the same independent laboratory at no additional cost to the Company.
- 4. Testing agency and laboratory reports: After each test, the Contractor shall promptly submit testing reports to the Construction Manager along with the Contractor's interpretation of test results.
- 5. The results of all tests shall be provided to the Construction Manager in accordance with Section 01 33 00 – Submittal Procedures. The results of each test shall be provided in a report that clearly identifies the following:
  - a. Source of samples
  - b. Sampling dates
  - c. Chain of custody
  - d. Sampling locations

- e. Test results
  - f. Contractor's certification that the samples tested and the results provided are representative of the materials that will be delivered to the Project Site.
- 6. Each Contractor Borrow Source Characterization Report shall include Level IV data packages for all chemical analyses. In addition, the Contractor shall collect and analyze at least one duplicate sample for each sample delivery group associated with the sampling for Borrow Source Characterization Reports.
  - 7. Laboratory data packages for other chemical analyses performed by the Contractor shall include Level II (or higher) data packages.
- G. GAC-amended Type A Backfill and Type B Backfill
- 1. The Contractor shall sample the blended GAC-amended Type A Backfill and GAC-amended Type B Backfill prior to placement.
  - 2. Composite samples shall be collected from the stockpiled mixture of GAC-amended Type A Backfill and GAC-amended Type B Backfill at a frequency of one sample per 500 tons for the entire quantity of material and submitted to the laboratory for analysis analyzed for TOC (EPA SW-846 9060 Modified). A minimum of six subsamples shall be collected from the stockpiled mixture to form each composite sample.
  - 3. Composite samples shall be collected from the stockpiled mixture of GAC-amended Type A Backfill and GAC-amended Type B Backfill at a frequency of at least one sample for each placement area or one sample per 500 tons of material, whichever is greater. These samples shall be submitted to the Construction Manager for dry weight GAC content analysis. It is generally expected that the Construction Manager will provide results of this GAC testing to the Contractor within 3 calendar days after sample receipt. A minimum of six subsamples shall be collected from the stockpiled mixture to form each composite sample.

### 3.04 LAYOUT OF WORK

- A. The Contractor shall establish an accurate method of horizontal and vertical control before backfilling and capping begins.
- B. The proposed method and maintenance of the horizontal control system shall be subject to approval by the Construction Manager. If, at any time, the method fails to provide accurate location for the backfilling or capping operation, the Contractor may be required to suspend their backfilling and capping operations.
- C. The Contractor shall lay out their work from horizontal and vertical control points indicated on the Drawings. All measurements shall be taken from these points. The Contractor shall furnish, at their own expense, all stakes, templates, platforms, equipment, range markers, transponder stations, and labor as may be required to lay out the Work. The Contractor shall maintain all points established for the Work until authorized to remove them. If such points are destroyed by the Contractor or disturbed through their negligence prior to an authorized removal, they shall be replaced by the Contractor at the Contractor's sole expense.

### 3.05 EQUIPMENT

- A. The Contractor shall select the means and methods for cap and backfill placement that shall achieve the required limits and grades, as well as the specified post-placement characteristics

of the Chemical Isolation Sand Layer. The Contractor's proposed means and methods shall be presented in the Backfilling and Capping Plan and shall be subject to approval by the Construction Manager.

- B. Vessels shall be adequately sized for their intended purpose, certified to be in good working condition, and meet all applicable navigational regulation requirements in accordance with Section 35 02 00 – Marine Equipment and Marine Traffic Control.
- C. Any equipment used for dredging or management of Contaminated Material must be adequately decontaminated in accordance with Section 01 72 00 – Decontamination of Equipment prior to handling backfill or cap materials.
- D. The Contractor shall provide continuous power supply and necessary power and data backup means for instrumentation, primarily for positioning system equipment.
- E. Positioning Equipment
  - 1. Equipment shall utilize a positioning system, or other approved method, to place the backfill and cap material.
  - 2. The Contractor shall have qualified positioning equipment technical support personnel on the Project Site whenever backfill or capping activities take place. Qualifications and experience of these individuals shall be supplied to the Construction Manager for approval.
  - 3. Positioning equipment shall be capable of the following:
    - a. Inputting and presenting a target placement file (an XYZ file on a gridded interval of 1 foot by 1 foot).
    - b. Recording all sensor information in standard ASCII format or other format approved by the Construction Manager to a hard disc so the position and movements of equipment can be reviewed at a later date (playback capability).
    - c. Producing plots showing the location where material placement occurred.
    - d. Using a true 3-D computational system to calculate the position of equipment taking into account the tilt and list of the platform as well as the standard positioning sensors.
    - e. Showing that the positioning system's error budget allows it to work within the stated vertical and horizontal accuracies. The error budget should include all errors associated with measuring the positioning of the equipment.
  - 4. The HYPACK, Inc, DREDGEPAK System is an acceptable version of such a positioning system. If the Contractor chooses to use an alternate positioning system, it must be approved by the Construction Manager.
  - 5. The positioning system for each capping plant shall be verified in the field prior to the scheduled use of the equipment. The equipment verification can be completed on land or on water and shall demonstrate the ability to achieve, monitor, and report these tolerances. The Construction Manager will be present for the operation and must approve the verification procedures. On-land verifications are considered contingent and shall be reverified once the equipment is on the water and before the equipment is used for backfill or capping. The Contractor must verify their error budget (i.e., quality control check of all positioning sensors to verify that individually and together, they operate within an error range that satisfies the error budget requirement) at least one time per day and include it

in the Daily Construction Quality Control Report in accordance with Section 01 40 00 – Contractor Quality Control.

### 3.06 POST-DREDGE BACKFILL PLACEMENT

- A. In areas where Interval Dredging (Dredge and Immediate Backfill Areas) is required, as shown on the Drawings, backfill placement shall be performed in accordance with the timeframe and requirements specified in Section 35 20 23 – Dredging.
- B. The Construction Manager will notify the Contractor when DMUs are ready for placement of backfill material after the Contractor has completed all dredging of a given DMU and after the post-dredge verification sampling test results have been approved by EPA in accordance with Section 35 20 23 – Dredging. Placement of backfill materials shall be completed within 10 calendar days after such notice from the Construction Manager unless otherwise approved by the Construction Manager. It is recognized that in some cases—due to a combination of factors such as in-water work restrictions, shallow water, and backfill designs requiring varying material types—an extension to these workday limits may be requested by the Contractor. The Construction Manager will review and evaluate the request and, at the Construction Manager's sole discretion, may authorize in writing an extension to the workday limits. The Contractor shall coordinate the planned sequence of Work in any such areas with the Construction Manager in order to limit the additional time that may be authorized.
- C. Backfill material shall be placed to the appropriate thickness to return dredged areas to pre-dredge grades, except where specifically noted on the Drawings. As noted on the Drawings, certain portions of the dredged areas will not require backfill placement to restore pre-dredge grades (i.e., in certain areas where dredging extends into the adjacent upland area for slope stability, in certain areas where thinner backfill placement is specified for geotechnical stability, and adjacent to the Staging Area bulkhead and Border Patrol Marina). In these areas, backfill shall be placed as described on the Drawings.
- D. Backfill placement within areas where the Contractor elects to perform access dredging shall be performed to return those areas to pre-construction grade.
- E. To the extent practicable, backfill shall be placed from the toe of slope proceeding toward the shoreline. As such, material will be placed starting on the steepest slope progressing to the shallowest slope.
- F. The Contractor shall place backfill materials in lifts not greater than 12 inches.
- G. At the start of backfill placement each construction season, the Contractor shall be required to demonstrate the efficacy of material blending and placement methods in the first DMU (referred to herein as a Backfill Placement Test). The Contractor shall place backfill material according to the following sequence for the Backfill Placement Test:
  - 1. Pre-placement surveys shall be conducted in accordance with per Section 02 21 00 – Surveys.
  - 2. The Contractor shall place backfill material in the first DMU to serve as a Backfill Placement Test Area.
  - 3. Backfill placement as part of the Backfill Placement Test shall be carefully tracked and monitored with a focus on placement methods, operational controls, and water quality.
  - 4. Post-placement bathymetric surveys shall be performed in accordance with Section 02 21 00 – Surveys to verify placement in accordance with the specified

requirements. The Contractor shall provide results of the survey to the Construction Manager for approval.

5. The Contractor shall make any necessary refinements to the material blending or placement process to comply with the specified requirements.
6. If deemed necessary by the Construction Manager, an additional Backfill Placement Test(s) will be required to demonstrate achievement of the required results prior to starting full-scale backfill placement.
7. The Contractor shall proceed with backfill material placement in the remaining DMU(s) after the Construction Manager approves the Backfill Placement Test in accordance with the methods used during the Backfill Placement Test.
8. The Contractor shall be required to conduct additional Backfill Placement Tests if placement means and methods change during the Work or if requested by the Construction Manager.

#### H. Post-Dredge Backfill – Backfill Placement Verification

1. Separate post-placement verification surveys are not required for each individual backfill material type placed within a DMU (i.e., Type A Backfill, Type B Backfill, and Type C Backfill). Although separate surveys are not required, the Contractor shall place each backfill material type at the locations shown on the Drawings and will be responsible for documenting backfill material placement locations on record drawings.
2. The Contractor shall submit a post-placement survey for each DMU for approval by the Construction Manager in accordance with Section 02 21 00 – Surveys.
3. Approval for backfill placement will be determined on a DMU basis by the Construction Manager.
4. Where backfill must be placed to pre-dredging elevations, approval of backfill placement will be based on a comparison of pre-dredging survey results and post-placement bathymetric survey results to verify that required elevations have been achieved.
5. In certain areas designated on the Drawings where backfill will not be required to restore pre-construction grades, approval of backfill placement will be based on post-placement surveys to verify that the required elevations and/or thicknesses noted on the Drawings have been achieved.
6. Backfill elevation compliance will be assessed on the same 10-foot by 10-foot grid cell layout used for dredge verification as described in Section 35 20 23 – Dredging. Survey data within each 10-foot by 10-foot grid cell (or portion thereof when constrained by the remedial boundaries) will be averaged to produce a single average elevation value for each cell. The average post-placement grid cell elevations will then be compared with the average required elevations for each corresponding grid cell (i.e., pre-dredging survey elevations).
  - a. Additional backfill material shall be placed if more than 10% of the grid cells in the DMU are below the required backfill elevations (with an allowable tolerance of minus 3 inches) or if any 10-foot by 10-foot grid cell average elevation is more than 3 inches below the allowable backfill tolerance (i.e., more than 6 inches below the required backfill elevations).

- b. If backfill material is overplaced in more than 10% of the DMU above the pre-dredge grade (with an allowable tolerance plus 3 inches), or if any 10-foot by 10-foot grid cell average elevation is more than 3 inches above the allowable backfill tolerance (i.e., more than 6 inches above the pre-dredge grade), the Contractor shall remove material as necessary to achieve compliance within each DMU.
- 7. Special considerations may be made, at the Construction Manager's discretion, for areas where backfill is not able to restore pre-dredge elevations (e.g., excessively steep slopes). In these areas, verification will be evaluated, at the Construction Manager's discretion, on a case-by-case basis considering specific field conditions, which may include exemptions or adjustments to acceptance criteria for these areas.
- 8. The upper 6 inches (minimum) of backfill material placed in the areas designated for wetland vegetation planting (by others), as shown on the Drawings, shall consist of Topsoil only. If more than 6 inches of material is required to backfill the wetland vegetation planting areas to pre-dredge bathymetry, Type A Backfill material shall be placed below the upper 6 inches or, at the Contractor's option, Topsoil may be placed within the entire depth of the wetland vegetation planting areas. If underlying Type A Backfill material is placed in the wetland vegetation planting areas, an initial post-placement survey shall be conducted by the Contractor following installation of the Type A Backfill material layer and a second post-placement survey conducted by the Contractor following installation of the Topsoil layer. If placed, the top of the underlying Type A Backfill material shall be at least 6 inches below the pre-dredging elevations measured by the Contractor's Pre-Dredge Survey. The final elevations of backfill placed in the wetland vegetation planting areas shall be subject to the verification requirements described in Part 3.06.H.6.
- 9. GAC-amended Type A Backfill and GAC-amended Type B Backfill shall be placed as shown on the Drawings in the areas designated for Interval Dredging (Dredge and Immediate Backfill) within DMU-S08A, DMU-S13, and DMU-S21. In addition, GAC-amended Type A Backfill and GAC-amended Type B Backfill shall be placed in dredged areas as directed by the Construction Manager where PCB concentrations exceed 20 mg/kg in post-dredge sample locations after a third dredging pass. Following receipt of post-dredge sampling results and prior to backfill placement, the Construction Manager will provide direction to the Contractor of the need for GAC-amended backfill.
  - a. In lieu of in-situ post-placement testing for GAC content, the Contractor shall amend the backfill by mixing GAC with Type A Backfill and Type B Backfill at a pre-placement ratio of 0.2% GAC on a dry weight basis to provide an adequate factor of safety to achieve the minimum 0.1% GAC on a dry weight. The Contractor shall submit documentation to verify that the amount of GAC blended with the backfill materials meets these requirements. The material shall be blended to produce a homogeneous mixture.
  - b. The Contractor shall conduct sampling and testing of the GAC-amended Type A Backfill and GAC-amended Type B Backfill in accordance with Part 3.03.G. Testing for GAC content will be performed by others as described in Part 3.03.G.
  - c. The Contractor shall place the GAC-amended Type A Backfill and GAC-amended Type B Backfill in a manner that minimizes the loss of GAC or other backfill material during placement.

### 3.07 FLOODPLAIN REMOVAL AREAS – BACKFILL PLACEMENT

- A. The Construction Manager will notify the Contractor when floodplain removal areas are ready for placement of backfill material after the Contractor has completed all excavation and after



the post-excavation verification sampling test results have been approved by EPA in accordance with Section 35 20 23 – Dredging. Placement of backfill materials shall be completed within 2 calendar weeks after such notice from the Construction Manager or as otherwise approved by the Construction Manager.

- B. The Contractor shall maintain functional erosion and sedimentation control measures and shall stabilize disturbed soils until permanent vegetation or stabilization measures are established. The Contractor shall install temporary soil stabilization measures if excavated or backfilled areas remain exposed for more than 48 hours. The Contractor's proposed erosion, sedimentation, and stabilization methods shall be described in the Backfilling and Capping Plan.
- C. Backfill material shall be placed in floodplain removal areas to the appropriate thickness to return excavated areas to pre-excavation grades, unless otherwise approved by the Construction Manager. In areas where restoring pre-excavation grade is not practicable due to steep pre-excavation slopes, the floodplain removal areas shall be restored to a stable slope. The proposed backfill elevations and grades in floodplain removal areas shall be approved by the Construction Manager after review of the pre-excavation surveys.
- D. The upper 6 inches (minimum) of backfill placed in floodplain removal areas shall consist of Topsoil. Type B backfill shall be placed below the Topsoil as necessary to achieve the required elevations and grades.
- E. The Contractor shall place backfill materials in lifts not greater than 8 inches as measured before compaction.
- F. The Contractor shall compact the backfill material to provide a firm and stable surface. Compaction methods may include vibratory rollers, hand-operated vibratory equipment, or mechanical tampers, or other methods approved by the Construction Manager. The Contractor's proposed compaction methods shall be described in the Backfilling and Capping Plan.
- G. Backfill placement shall be accomplished in such a manner that placed materials provide a uniform layer of required thickness within the tolerances detailed herein.
- H. Floodplain Removal Area – Backfill Placement Verification
  - 1. The Contractor shall submit a post-placement topographic survey for each floodplain removal area for approval by the Construction Manager in accordance with Section 02 21 00 – Surveys.
  - 2. Approval of backfill placement and will be based on a comparison of pre-excavation survey results and post-placement survey results to verify that required elevations have been achieved.

### 3.08 MAIN CHANNEL CAP PLACEMENT

- A. Main channel caps shall include the following:
  - 1. Main Channel Armored Cap: The Main Channel Armored Cap shall be placed between T1 and T19, as shown on the Drawings. The Main Channel Armored Cap shall consist of Armor Layer, over Gravel Filter Layer, over Chemical Isolation Layer (sand with GAC). In areas designated on the Drawings between T4 and T19, a surficial layer of Habitat Layer Material shall be placed on top of the completed Main Channel Armored Cap as described herein and in the areas shown on the Drawings. In one area as shown on Drawing C-6

between T12 and T12.5, the Main Channel Armored Cap shall be placed no Armor Layer material due to shallow water depths; instead the Main Channel Armored Cap in this area shall consist of the Chemical Isolation Layer (sand with GAC) and Gravel Filter Layer.

2. Main Channel Modified Armored Cap: The Main Channel Modified Armored Cap shall be placed between T19 and T21, as shown on the Drawings. The Main Channel Modified Armored Cap shall consist of Modified Armor Layer over Chemical Isolation Layer (sand with GAC). In areas designated on the Drawings between T19 and T20, a surficial layer of Habitat Layer Material shall be placed on top of the completed Main Channel Modified Armored Cap as described herein.
  3. Main Channel Cap: The Main Channel Cap shall be placed between T21 and T72, as shown on the Drawings. The Main Channel Cap shall consist of Habitat Layer Material over Chemical Isolation Layer (sand with GAC).
- B. The Contractor shall place the Chemical Isolation Layer (sand with GAC), Gravel Filter Layer, and Armor Layers in such a manner that placed materials form a uniform layer of required thickness within the tolerances described in Tables 2, 3, and 4 and on the Drawings. The Contractor shall place the Chemical Isolation Layer material so that the GAC is uniformly distributed throughout the layer. After the Chemical Isolation Sand Layer has been placed, the Contractor shall utilize an appropriate capping method to place the subsequent layers, such that placement does not disturb the placed Chemical Isolation Layer.
- C. The edges of the caps shall be constructed as shown in the transition details on the Drawings.
- D. The design layer thickness (i.e., minimum thickness), overplacement allowance, and maximum allowable material placement thicknesses are shown in Tables 2, 3, and 4.

**Table 2: Main Channel Armored Cap Requirements (T1 – T19)**

<b>Material</b>	<b>Design Layer Thickness (Minimum Thickness)</b>	<b>Overplacement Allowance</b>	<b>Maximum Layer Thickness</b>
Chemical Isolation Layer (Sand with GAC)	6 inches	3 inches	9 inches
Gravel Filter Layer	6 inches	3 inches	9 inches
Armor Layer	13 inches	6 inches	19 inches
<b>Total</b>	<b>25 inches</b>	<b>12 inches</b>	<b>37 inches</b>

Note: Habitat Layer placed above Armor Layer shall be placed and verified on a volumetric basis in accordance with Part 3.08.F.

**Table 3: Main Channel Modified Armored Cap Requirements (T19 – T21)**

<b>Material</b>	<b>Design Layer Thickness (Minimum Thickness)</b>	<b>Overplacement Allowance</b>	<b>Maximum Layer Thickness</b>
Chemical Isolation Layer (Sand with GAC)	6 inches	3 inches	9 inches
Modified Armor Layer	12 inches	6 inches	18 inches
<b>Total</b>	<b>18 inches</b>	<b>9 inches</b>	<b>27 inches</b>

Note: Habitat Layer placed above Modified Armor Layer shall be placed and verified on a volumetric basis in accordance with Part 3.08.F.

**Table 4: Main Channel Cap Requirements (T21 – T72)**

<b>Material</b>	<b>Design Layer Thickness</b>	<b>Overplacement Allowance</b>	<b>Maximum Total Cap Thickness</b>
Chemical Isolation Layer (Sand with GAC)	6 inches (minimum thickness)	3 inches	15 inches
Habitat Material Layer	6 inches (target layer thickness*)	0 inches	
<b>Total</b>	<b>12 inches (minimum thickness)</b>	<b>3 inches</b>	<b>15 inches</b>
* The Habitat Material Layer does not include a minimum layer thickness. Compliance for the Main Channel Cap will be based on the minimum Chemical Isolation Layer thickness and the total cap thickness.			

- E. In certain areas shown on the Drawings, each layer of the cap shall be placed and verified by measuring the amount of material placed as described in Part 3.08.O.
- F. Where a surficial layer of Habitat Layer Material is required over the completed Main Channel Armored Cap and Modified Armored Cap as shown on the Drawings, the Contractor shall place at least 11 cubic yards of Habitat Layer Material for each 1,000 square feet for cap area. The Habitat Layer has been designed to fill the interstitial voids between the Armor Layer and leave approximately 1 to 2 inches of material on top of the stone. Placement of the Habitat Layer will be verified by measuring the amount of material placed per unit area as described in Part 3.08.M.
- G. For the surficial layer of Habitat Layer Material required over the completed Main Channel Cap from T21 to T72, as shown on the Drawings, the Contractor shall place a 6-inch Habitat Layer over the Chemical Isolation Layer such that the combined thickness of the Chemical Isolation Layer and Habitat Layer is a minimum of 12 inches.
- H. At the start of cap placement each construction season, or at any time requested by the Construction Manager, the Contractor shall be required to demonstrate the efficacy of material blending and placement methods. The Contractor shall first demonstrate through on-site bench-scale testing that cap materials (including amendments) have been adequately prepared (including pre-soaking) and will uniformly settle through a column of water without visible segregation to the satisfaction of the Construction Manager. Following approval by the Construction Manager of the bench-scale testing, the Contractor shall demonstrate placement in the first CCU or portion thereof with a target of approximately 0.25 acre (referred to herein as a Cap Placement Test). The Contractor shall place cap material according to the following sequence for the Cap Placement Test:

1. Pre-placement surveys shall be conducted in accordance with per Section 02 21 00 – Surveys.
2. The Contractor shall submit information to the Construction Manager with the mix ratio of sand and GAC used to produce the Chemical Isolation Layer material along with corresponding pre-placement GAC content analytical data for the blended material stockpile.
3. The Contractor shall place the Chemical Isolation Layer (sand with GAC) in the first CCU (or portion thereof to target approximately 0.25 acre) to serve as a Cap Placement Test.
4. Cap placement as part of the Cap Placement Test shall be carefully tracked and monitored, with a focus on placement methods, operational controls, and water quality.
5. Verification of compliance with the specified cap layer thickness requirements for the Chemical Isolation Layer shall be based on a combination of physical measurements (i.e., core samples and catch pans) and supplemented by bathymetric survey data as described in Part 3.08.I.
  - a. For each Cap Placement Test area, the Contractor shall collect and measure at least four cap material core samples and at least four catch pans for the Chemical Isolation Layer to verify cap layer thickness requirements are achieved as described in Part 3.08.I.
  - b. The Contractor shall conduct bathymetric surveys as described in Part 3.08.I.
  - c. The Contractor shall prepare and submit documentation of volumetric placement and equipment positioning as an additional line of evidence to verify proper cap placement to the extents required by the design.
  - d. In addition to the cap thickness measurements described above for verifying compliance, the Contractor shall perform quality control checks throughout cap placement operations. These quality control checks shall include continual tracking of material volumes placed in a given area. In addition, the Contractor shall collect additional physical samples (i.e., core samples or catch pans) to provide feedback on equipment operations. These field measurements shall be documented in logbooks, field forms, or an electronic database. The Contractor shall submit these data to the Construction Manager for review to corroborate the compliance data and support decisions if any response actions are necessary.
  - e. Information gathered during the Cap Placement Test will be used to determine the selection of the most appropriate thickness verification measurement technique (i.e., cap material core samples or catch pans) during full-scale cap placement operations.
6. The Construction Manager will then sub-sample the cores and send for laboratory analysis of GAC content.
  - a. If analytical results indicate the in situ GAC content satisfies the design requirements as outlined in Part 2.01.H.1, the Construction Manager will provide written approval of the Cap Placement Test, and the Contractor shall proceed with placement of the Chemical Isolation Layer (sand with GAC) using the same pre-placement mix ratio, pre-placement GAC content, placement methods, and placement rate over the remaining cap area shown on the Drawings. At the discretion of the Construction Manager, the Contractor may be required to repeat the Cap Placement Test at any time throughout duration of cap placement.

- b. If the Construction Manager observes uneven distribution of the GAC or if analytical results indicate in situ GAC content does not conform to the design requirements, the Contractor shall provide a corrective action plan for the Construction Manager's approval for the original Cap Placement Test Area, as well as the remainder of the cap area shown on the Drawings. Once the corrective action plan is approved by the Construction Manager and implemented by the Contractor, the Construction Manager will resample the Chemical Isolation Layer material. The Contractor shall not continue with cap placement activities until receipt of written approval from the Construction Manager that the Chemical Isolation Layer is acceptable.
  - c. The Contractor shall be required to conduct additional Cap Placement Tests if any of the following change: the pre-placement blending ratio; the pre-placement GAC content; or the placement means, methods, or rates. Any delays associated with additional GAC sampling verification due to changes in the Contractor's approach shall be at no additional cost to the Company.
  - d. The Construction Manager reserves the right to collect additional core samples from placed Chemical Isolation Layer material for GAC content verification at any time.
7. After verification of the Chemical Isolation Layer as part of the Cap Placement Test, the Contractor shall proceed with placement of subsequent cap layers.
- I. Verification of compliance with the specified cap layer thickness requirements for each CCU (or group of CCUs) will be based on a combination of physical measurements (i.e., core samples and catch pans) and bathymetric surveys. Each cap layer shall meet the applicable compliance criteria described in Parts 3.08.L, 3.08.M, 3.08.N, and 3.08.O.
- 1. Physical measurements (i.e., core samples or catch pans) will be the primary method used to verify compliance with the specified cap layer thickness requirements for the Chemical Isolation Layer, Gravel Filter Layer, and Modified Armor Layer and bathymetric surveys will be used to supplement the data as outlined below.
    - a. The Contractor shall submit, for the Construction Manager's review, the proposed thickness verification measurement technique (i.e., cap material core samples or catch pans) for each cap layer prior to cap placement. Selection of the proposed thickness verification measurement technique shall be based on the type of material to be sampled, local conditions, Contractor's prior experience, information gathered during the Staged Construction Cap Pilot Test or the Cap Placement Test, and any lessons learned during implementation of the Work. The thickness verification measurement techniques to be implemented will be subject to approval by the Construction Manager. Any proposed changes to the thickness verification measurement techniques during the course of the Work shall be submitted to the Construction Manager for review and approval.
    - b. The Contractor shall collect and document physical measurements (i.e., core samples or catch pans) to verify cap layer thickness following the phased approach outlined below:
      - 1) Phase 1: At the beginning of each construction season or when placement methods change, eight physical measurements shall be collected per acre for cap layer thickness verification.
      - 2) Phase 2: After two successive sets of measurements collected during Phase 1 meet the cap layer thickness compliance criteria, then the measurement frequency

thereafter will be four physical measurements per acre for cap layer thickness verification, as long as consistent cap placement methods are used.

- c. Prior to placement of each cap layer in each CCU, the Contractor shall obtain Construction Manager approval of the type of physical measurements (i.e., core samples or catch pans) to be collected, the measurement frequency, and the measurement locations.
- d. The core sample and catch pan locations shall be randomly selected based on coordination with the Construction Manager, constrained only by the lateral extent of the CCU and the position relative to other measurement locations to provide spatial distribution.
- e. The Contractor shall document the location and measured thickness of each core sample and catch pan. In addition, the Contractor shall photograph the thickness of each core sample and catch pan collected.
- f. The Contractor shall notify the Construction Manager prior to collection of cores or retrieval of catch pans and provide the Construction Manager the opportunity to oversee the collection and/or retrieval.
- g. Where coring devices are used as the standard to measure applied cap for the Chemical Isolation Layer thickness, the applied thickness shall be determined from visual observation of the clean (unmixed) sand thickness plus 50% of the mixing zone thickness where the sand comprises at least half of the matrix, as determined through visual observations or physical characterization in the field.
- h. Where catch pans are used as the standard to measure the applied cap thickness for any material, the applied thickness shall be determined as the average of at least two measurements across the catch pan.
- i. Compliance of the Habitat Layer above the Chemical Isolation Layer for the Main Channel Cap downstream of T21 will be assessed using physical measurements, but the compliance criteria will be based on achievement of the total main channel cap thickness of 12 inches after placement of the Chemical Isolation Layer has been approved. To verify the minimum 12-inch total cap thickness has been achieved, core samples shall be advanced through the entire cap thickness (both the Chemical Isolation Layer and the Habitat Layer) at the same frequency described in Part 3.08.I.1.b. Where coring devices are used to measure the entire cap thickness (both the Chemical Isolation Layer and the Habitat Layer), the applied thickness will be determined from visual observation of the clean (unmixed) sand thickness plus 50% of the mixing zone thickness where the sand comprises at least half of the matrix, as determined through visual observations or physical characterization in the field.
- j. The Contractor shall document and submit results of physical thickness measurements to the Construction Manager for approval and verification of placed layer thickness. The physical measurements shall be summarized in a tabulated format that, at a minimum, identifies the sample ID, sample location, CCU, sample type, cap layer, sampled material description, measured thickness, and relevant observations or notes.
- k. To supplement the physical measurement data, the Contractor shall conduct post-placement multibeam bathymetric surveys after placement of each cap layer in the CCU in accordance with Section 02 21 00 – Surveys. For the Chemical Isolation Layer and Gravel Filter Layer, the bathymetric surveys will be used to verify uniform material placement across the placement area. Bathymetric surveys shall be processed on a

10-foot by 10-foot grid. Survey data within each 10-foot by 10-foot grid cell (or portion thereof when constrained by the remedial boundaries) shall be averaged to produce a single average elevation value for each cell.

- i. The Contractor shall prepare isopach (i.e., thickness) maps for each cap layer based on the pre-placement and post-placement bathymetric surveys to verify that cap placement is uniform and to verify placement across the required extent of placement.
  - m. If any non-conforming areas are identified, additional physical measurements will be conducted to assess the layer thickness, and additional material shall be placed if deemed necessary by the Construction Manager.
2. Bathymetric surveys will be used to verify compliance with the specified cap layer thickness requirements for the Armor Layer from T1 to T19.
  - a. The Contractor shall conduct post-placement multibeam bathymetric surveys after placement of each cap layer in accordance with Section 02 21 00 – Surveys.
  - b. Bathymetric surveys shall be processed on a 10-foot by 10-foot grid. Survey data within each 10-foot by 10-foot grid cell (or portion thereof when constrained by the remedial boundaries) shall be averaged to produce a single average elevation value for each cell.
  - c. The Contractor shall prepare isopach (i.e., thickness) maps for each cap layer based on the pre-placement and post-placement bathymetric surveys.
  - d. The bathymetric survey data will be used to verify cap layer thickness requirements are achieved, to verify cap placement is uniform, and to verify placement across the required extent of placement.
3. The Contractor shall also prepare and submit documentation of volumetric placement and equipment positioning as an additional line of evidence to verify proper cap to the extents required by the design.
4. In addition to the cap thickness measurements for verifying compliance described above, the Contractor shall perform quality control checks throughout cap placement operations. These quality control checks shall include continual tracking of material volumes placed in a given area. In addition, the Contractor shall collect additional physical samples (i.e., core samples or catch pans) to provide feedback on equipment operations. These field measurements shall be documented in logbooks, field forms, or an electronic database. The Contractor shall submit these data to the Construction Manager for review to corroborate the compliance data and support decisions if any response actions are necessary.
5. The physical measurement results and post-placement multibeam bathymetric surveys shall be submitted to the Construction Manager for approval and verification of placed layer thickness for each cap layer in each CCU. The Construction Manager will also review the volumetric placement documentation and quality control documentation provided by the Contractor in evaluating compliance with the layer thickness requirements.
6. Subsequent cap layers shall not be placed until authorized by the Construction Manager.
7. If the cap thickness verification measurements or bathymetric verification surveys show deviations from the specified requirements in any cap layer, the Contractor shall implement corrective action to conform to the Drawings and Specifications, including, but not limited

to, additional material placement or removal of excess material. In any such case, the Contractor shall conduct additional physical measurements and post-placement multibeam bathymetric surveys to verify the adequacy of the cap placement prior to continuing the Work at no additional cost to the Company. Removal of cap materials will only be required where the excessive over-placement results (or could result with overlying layers) in water depth less than 3 feet or in areas of staged construction cap placement. Direction on the removal of cap materials will be at the sole discretion of, and at no additional cost to, the Company.

J. Steep Slope Cap Areas

1. In certain portions of the river shown on the Drawings, placement of Slope Grading Fill shall be required on steep slopes prior to cap placement. Placement shall achieve the limits and grades of the Slope Grading Fill XYZ Files. Steep slopes shown on the Drawings are defined as slopes taller than 4 feet and with average slopes steeper than 3 Horizontal (H):1 Vertical (V). Slope Grading Fill shall be placed on steep slopes in specific areas as indicated on the Drawings to achieve slopes no steeper than 3H:1V. Compliance of the elevations and slopes for the Slope Grading with the Drawings and Specification requirements will be verified and approved by the Construction Manager based on comparing the bathymetric survey results with the Slope Grading Fill XYZ Files.
2. Steep Slope Armored Cap Staged Construction Pilot Test: The Contractor shall demonstrate successful placement of Slope Grading Fill and overlying Main Channel Armored Cap in the pilot test areas at the designated locations shown on the Drawings. The Steep Slope Armored Cap Staged Construction Pilot Test shall be constructed in the following sequence:
  - a. The Contractor shall perform a Pre-Placement Pilot Test Area Survey for the pilot test area as specified in Section 02 21 00 – Surveys.
  - b. The Contractor shall place Slope Grading Fill in layers in a sequential manner starting from the toe of the slope and advancing upslope. The maximum thickness of the Slope Grading Fill layers shall not exceed the values specified on the Drawings or those otherwise approved by the Construction Manager. Slope Grading Fill shall be placed in a staged sequence with minimum wait periods between layers as shown on the Drawings or as otherwise approved by the Construction Manager.
  - c. Progress surveys and Post-Placement Pilot Test Area Surveys and shall be performed by the Contractor in accordance with Section 02 21 00 – Surveys.
  - d. After final slope grades have been achieved in accordance with the Drawings and approved by the Construction Manager following placement of the Slope Grading Fill, the Contractor shall place the Chemical Isolation Layer to achieve the minimum required thickness specified in Part 3.08.D, using the procedures and equipment proposed in the approved Backfill and Capping Plan. The Chemical Isolation Layer shall be placed after the required wait period following placement of the Slope Grading Fill as shown on the Drawings or as otherwise approved by the Construction Manager.
  - e. After placement of the Chemical Isolation Layer, the Contractor shall collect physical measurements of the cap layer and perform a Post-Placement Pilot Test Area Survey as specified in Section 02 21 00 – Surveys to verify cap layer thickness as described in Part 3.08.I.
  - f. After placement of the Chemical Isolation Layer is approved by the Construction Manager, the Contractor shall place the Gravel Filter Layer to achieve the minimum



required thickness specified after the required wait period following placement of the Chemical Isolation Layer as shown on the Drawings or as otherwise approved by the Construction Manager. Prior to placement of the Gravel Filter Layer, the Contractor shall perform a Pre-Placement Pilot Test Area Survey as specified in Section 02 21 00 – Surveys.

- g. After placement of the Gravel Filter Layer, the Contractor shall collect physical measurements of the cap layer and perform a Post-Placement Pilot Test Area Survey as specified in Section 02 21 00 – Surveys to verify cap layer thickness as described in Part 3.08.I.
  - h. After placement of the Gravel Filter Layer is approved by the Construction Manager, the Contractor shall place the Armor Layer to achieve the required minimum thickness specified after the required wait period following placement of the Gravel Filter Layer as shown on the Drawings or as otherwise approved by the Construction Manager. Prior to placement of the Armor Layer, the Contractor shall perform a Pre-Placement Pilot Test Area Survey as specified in Section 02 21 00 – Surveys.
  - i. The Contractor shall perform a Post-Placement Pilot Test Area Survey after placement of the Armor Layer in accordance with Section 02 21 00 – Surveys.
  - j. The Steep Slope Armored Staged Construction Cap Pilot Test construction shall be deemed complete by the Construction Manager after: 1) the required slope grades as shown on the Drawings are achieved after Slope Grading Fill placement, and 2) each cap layer achieves the minimum required cap thickness as specified. Compliance of the final slope grades and cap layer thicknesses with the Drawings and Specification requirements will be verified and approved by the Construction Manager based on physical measurements and survey results as described in Part 3.08.I.
  - k. If the required slope grades or cap layer extents or thicknesses have not been achieved within acceptable tolerances, as shown on the Drawings and required by this Specification, as determined by the Construction Manager, the Contractor may be required to place or remove Slope Grading Fill and/or cap material, as necessary, in the unacceptable areas. Following corrective action, the Contractor shall conduct additional physical measurements, as applicable, and surveys at no additional cost to the Company to verify cap layer placement.
  - l. In situ geotechnical monitoring and testing of the existing soils in the Steep Slope Armored Cap Staged Construction Pilot Test area will be performed by others prior to, during, and after material placement. The Contractor shall coordinate and cooperate with others working at and around the Steep Slope Armored Cap Pilot area.
  - m. In addition to cap layer verification as described in Part 3.08.I, the Post-Placement Pilot Test Area Surveys will be used in the evaluation of potential geotechnical consolidation as part of the pilot test and as a baseline to verify cap layer integrity prior to placement of the next subsequent cap layer after the staged construction wait period.
3. The Contractor shall maintain a detailed record of Steep Slope Armored Cap Staged Construction Pilot Test configuration, equipment, material placement rates, placement schedule, lift thicknesses, and wait times between lifts during the pilot test construction. Test demonstration records shall be submitted to the Construction Manager upon completion of pilot test activities. After successful demonstration of Steep Slope Armored Cap Staged Construction Pilot Test, full-scale capping of steep side slopes shall continue using the procedures and equipment established from the Steep Slope Armored Cap Staged Construction Pilot Test.

4. The required wait periods indicated on the Drawings between placement of Slope Grading Fill layers and Armored Cap layers for the "full-scale" cap placement on steep slopes are subject to change based on the geotechnical monitoring data collected from the Steep Slope Armored Cap Staged Construction Pilot Test.
5. In steep slope areas designated for Slope Grading Fill and staged construction cap placement on the Drawings, Slope Grading Fill shall be placed in lifts in accordance with the procedures and wait periods established based on the Steep Slope Armored Cap Staged Construction Pilot Test or as approved by the Construction Manager. Fill placement shall progress from the toe of slope to the top of slope to the extent practicable.
6. If there are any deviations from the specified requirements (thickness and/or slope grades) in any Slope Grading Fill or overlying cap layer, the Contractor shall implement corrective action to conform to the Drawings and Specifications, including, additional material placement or removal of excess material. In any such case, the Contractor shall conduct additional physical measurements, as applicable, and post-placement multibeam bathymetric surveys to verify the adequacy of the cap placement prior to continuing the Work and at no additional cost to the Company.

K. Main Channel - Staged Construction of Armored Cap

1. In certain portions of the main channel as shown on the Drawings, staged construction of the Armored Cap and Modified Armored Cap shall be required due to the presence of underlying soft sensitive clay.
2. Armored Cap Staged Construction Pilot Tests: The Contractor shall demonstrate successful placement of an Armored Cap and Modified Armored Cap in the pilot test areas at the designated locations in the main channel as shown on the Drawings. The Armored Cap Stage Construction Pilot Tests in the main channel shall be constructed in the following staged sequence:
  - a. The Contractor shall perform a Pre-Placement Pilot Test Area Survey for the pilot test areas as specified in Section 02 21 00 – Surveys.
  - b. The Contractor shall place the Chemical Isolation Layer to achieve the required minimum thickness using the procedures and equipment proposed in the approved Backfill and Capping Plan.
  - c. After placement of the Chemical Isolation Layer, the Contractor shall collect physical measurements of the cap layer and perform a Post-Placement Pilot Test Area Survey as specified in Section 02 21 00 – Surveys to verify cap layer thickness as described in Part 3.08.I.
  - d. After placement of the Chemical Isolation Layer is approved by the Construction Manager, the Contractor shall place the Gravel Filter Layer (where applicable) to achieve the required minimum thickness specified after the required wait period following placement of the Chemical Isolation Layer as shown on the Drawings or otherwise approved by the Construction Manager. Prior to placement of the Gravel Filter Layer, the Contractor shall perform a Pre-Placement Pilot Test Area Survey as specified in Section 02 21 00 – Surveys.
  - e. After placement of the Gravel Filter Layer, the Contractor shall collect physical measurements of the cap layer and perform a Post-Placement Pilot Test Area Survey as specified in Section 02 21 00 – Surveys to verify cap layer thickness as described in Part 3.08.I.

- f. After placement of the Gravel Filter Layer (where applicable) is approved by the Construction Manager, the Contractor shall place the Armor Layer (or Modified Armor Layer where applicable) to achieve the required minimum thickness specified after the required wait period following placement of the preceding layer as shown on the Drawings or as otherwise approved by the Construction Manager. Prior to placement of the Armor Layer (or Modified Armor Layer where applicable), the Contractor shall perform a Pre-Placement Pilot Test Area Survey as specified in Section 02 21 00 – Surveys.
  - g. The Contractor shall perform a Post-Placement Pilot Test Area Survey after placement of the Armor Layer (or Modified Armor Layer where applicable) in accordance with Section 02 21 00 – Surveys. After placement of the Modified Armor Layer, the Contractor shall also collect physical measurements of the cap layer to verify cap layer thickness as described in Part 3.08.I.
  - h. After placement of the Armor Layer (or Modified Armor Layer where applicable), the Contractor shall place the Habitat Layer in accordance with the application rates specified after the minimum required wait period following placement of the preceding layer as shown on the Drawings or as otherwise approved by the Construction Manager. The Habitat Layer may be placed after completion of the Armored Cap Staged Construction Pilot Test.
  - i. The Armored Cap Staged Construction Pilot Test construction shall be deemed complete by the Construction Manager after placement of all Armored Cap (or Modified Armored Cap) layers (excluding the Habitat Layer) such that each layer achieves the minimum required cap thickness as specified. Compliance of the cap layer thicknesses with the Specification requirements will be verified and approved by the Construction Manager based on physical measurements and survey results as described in Part 3.08.I.
  - j. If the required cap layer extents or thicknesses have not been achieved within acceptable tolerances, as shown on the Drawings and required by this Specification, as determined by the Construction Manager, the Contractor may be required to place or remove cap material, as necessary, in the unacceptable areas. Following corrective action, the Contractor shall conduct additional physical measurements, as applicable, and surveys at no additional cost to the Company to verify cap layer placement.
  - k. In situ geotechnical monitoring and testing of the soils in the Armored Cap Staged Construction Pilot Test Area will be performed by others prior to, during, and after material placement. The Contractor shall coordinate and cooperate with others working around the Armored Cap Staged Construction Pilot Tests.
  - l. In addition to cap layer verification as described in Part 3.08.I, the Post-Placement Pilot Test Area Surveys will be used in the evaluation of potential geotechnical consolidation as part of the pilot test and as baseline to verify cap layer integrity prior to placement of the next subsequent cap layer after the staged construction wait period.
3. During the pilot test construction, the Contractor shall maintain a detailed record of the Armored Cap Staged Construction Pilot Tests configuration, equipment, material placement rates, placement schedule, lift thicknesses, and wait times between lifts. Test demonstration records shall be submitted to the Construction Manager upon completion of pilot test activities. After successful demonstration of Armored Cap Staged Construction Pilot Tests, full-scale capping of armored caps shall continue using the procedures and equipment established from the Armored Cap Staged Construction Pilot Tests.

4. The required wait periods between placement of armored cap layers for the full-scale cap placement are subject to change based on the geotechnical monitoring data collected from the Armored Cap Staged Construction Pilot Tests.
  5. The edges of partially constructed caps shall be sloped in accordance with the transition detail shown on the Drawings or as approved by the Construction Manager.
- L. Cap Thickness Verification – Main Channel Armored Cap (T1 – T19) and Modified Armored Cap (T19 – T21)
1. The Contractor shall submit documentation of physical cap layer measurements, as applicable, in accordance with Part 3.08.I and a post-placement multibeam bathymetric survey for each cap layer in each CCU for approval by the Construction Manager in accordance with Section 02 21 00 – Surveys.
  2. Approval for cap placement of the Chemical Isolation Layer, Gravel Filter Layer, and Armor Layer for T1 through T19 and the Chemical Isolation Layer and Modified Armor Layer for T19 through T21 will be determined on a CCU basis by the Construction Manager. Placement of the specified thickness and extent of each cap layer for the Main Channel Armored Cap will be verified using the physical cap layer measurements and by comparing pre-placement and post-placement bathymetric surveys as described in Part 3.08.I. Placement equipment positioning records will also be used to verify proper placement of main channel armored caps to the extents required by the design.
  3. Placement of the Chemical Isolation Layer, Gravel Filter Layer, and Modified Armor Layer will be considered complete within a CCU if the minimum required design thickness has been achieved in at least 95% of the thickness measurements in that CCU, and any remaining measurements are 90% or greater of the minimum design thickness. The Contractor shall place additional cap material if more than 5% of the thickness measurements in the CCU do not meet the required thickness, or if any thickness measurement is more than 10% below the required thickness.
  4. Placement of the Armor Layer will be considered complete within a CCU if the minimum required design thickness has been achieved in at least 95% of the 10-foot by 10-foot grid cells in that CCU, and any remaining 10-foot by 10-foot grid cells are less than 6 inches below the minimum design thickness. The Contractor shall place additional cap material if more than 5% of the 10-foot by 10-foot grid cells in the CCU do not meet the required thickness, or if any 10-foot by 10-foot grid is more than 6 inches below the required thickness.
  5. Verification of uniform material placement across the required placement area will be determined based on review of bathymetric survey data that shows consistent placement across the area.
  6. If any cap layer exceeds the overplacement allowance in more than 10% of the CCU and if directed by the Construction Manager, the Contractor shall remove material as necessary to achieve compliance with specified overplacement thicknesses. Reuse of removed excess placement material will not be permitted, and the removed excess placement material shall require disposal at the Contractor's expense.
- M. Habitat Layer Verification – Main Channel Armored Cap and Modified Armored Cap (T4 – T19.5)
1. Approval for placement of the Habitat Layer Material will be determined on a CCU basis by the Construction Manager.

2. Verification that the Habitat Layer is placed to the specified requirements shall be based on the following lines of evidence:
    - a. Volumetric estimates. To document that the appropriate volume of Habitat Layer Material is placed, the Contractor shall submit reports in a form acceptable to the Construction Manager for Habitat Layer Material placed that identifies the volume and weight of the material placed in each CCU, the material type, the areal extent where the material was placed, and the date and time when the material was loaded and placed.
    - b. Spatial coverage. To document that the Habitat Layer Material has been placed over the required footprint, the Contractor shall submit electronic records of the placement of Habitat Layer Material in each CCU (e.g., bucket positioning figures and electronic bucket data files or spreader barge position tracking). For each CCU, the electronic records shall be accompanied by a summary of the total area (e.g., square yards) of coverage and the volume of material placed.
    - c. Construction Manager observations. The Construction Manager will conduct visual observations to verify that the Habitat Layer Material placement activities are conducted by the Contractor in a manner that provides uniform distribution of the Habitat Layer Material for each location.
  3. Approval of Habitat Layer Material placement will be determined by the Construction Manager and will be based on the following:
    - a. Review of the Habitat Layer reports prepared by the Contractor to verify that the volume of Habitat Layer Material placed meets the requirements described in Part 3.08.F.
    - b. Visual observations by the Construction Manager of the placement operations that verify the Habitat Layer is placed in a manner that provides uniform distribution of the Habitat Layer Material for each location.
  4. If the requirements of Part 3.08.M.3 are not met, the Contractor shall conduct additional Habitat Layer placement operations as directed by the Construction Manager.
  5. Material placed outside of the CCU limits will not be eligible for payment.
  6. Any Habitat Layer Material furnished, loaded, transported, handled, or placed that does not comply with this Specification will not be paid for.
- N. Cap Thickness Verification – Main Channel Cap (T21 – T72)
1. The Contractor shall submit documentation of physical cap layer measurements, as applicable, in accordance with Part 3.08.I and a post-placement multibeam bathymetric survey for each cap layer in each CCU for approval by the Construction Manager in accordance with Section 02 21 00 – Surveys.
  2. Approval for cap placement of the Chemical Isolation Layer and Habitat Layer will be determined on a CCU basis by the Construction Manager. Placement of the specified thickness and extent of each cap layer for the Main Channel Cap will be verified using the physical cap layer measurements and by comparing pre-placement and post-placement bathymetric surveys as described in Part 3.08.I. Placement equipment positioning records will also be used to verify proper placement of main channel caps to the extents required by the design.

3. Placement of the Chemical Isolation Layer will be considered complete within a CCU if the minimum required design thickness has been achieved in at least 95% of the thickness measurements in that CCU, and any remaining measurements are 90% or greater of the minimum design thickness. The Contractor shall place additional cap material if more than 5% of the thickness measurements in the CCU do not meet the required thickness, or if any thickness measurements is more than 10% below the required thickness.
  4. Placement of the Habitat Layer above the Chemical Isolation Layer will be considered complete within a CCU if the minimum total cap thickness of 12 inches has been achieved in at least 95% of the thickness measurements in that CCU, and any remaining measurements are 90% or greater of minimum total cap thickness of 12 inches (i.e., at least 10.4 inches). The Contractor shall place additional cap material if more than 5% of the thickness measurements in the CCU do not meet the required thickness, or if any thickness measurement is more than 10% below the required thickness.
  5. Verification of uniform material placement across the required placement area will be determined based on review of bathymetric survey data that shows consistent placement across the area.
  6. If any cap layer exceeds the overplacement allowance in more than 10% of the CCU and if directed by the Construction Manager, the Contractor shall remove material as necessary to achieve compliance with specified overplacement thicknesses. Reuse of removed excess placement material will not be permitted and the removed excess placement material shall require disposal at the Contractor's expense.
- O. Twelve-inch-thick Chemical Isolation Layer Cap Area Verification
1. Where specified, caps with the 12-inch-thick Chemical Isolation Layer shall be constructed by placing the following:
    - a. Armored Cap Area (T1-T19)
      - 1) At least 45 cubic yards of Chemical Isolation Layer material (sand and GAC) for each 1,000 square feet of cap area.
      - 2) At least 23 cubic yards of Gravel Filter Layer material for each 1,000 square feet of cap area.
      - 3) At least 48 cubic yards of Armor Layer material for each 1,000 square feet of cap area.
      - 4) At least 11 cubic yards of Habitat Layer material for each 1,000 square feet of cap area.
    - b. Main Channel Cap Area (T21-T72)
      - 1) At least 45 cubic yards of Chemical Isolation Layer Material (sand and GAC) for each 1,000 square feet of cap area.
      - 2) At least 23 cubic yards of Habitat Layer material for each 1,000 square feet of cap area.
  2. Where specified, verification of placement for each layer of the cap within the 12-inch-thick Chemical Isolation Layer cap area shall be based on the following lines of evidence:

- a. Volumetric estimates. To document placement of the appropriate volume of material, the Contractor shall submit reports, in a form acceptable to the Construction Manager, for each layer placed that identifies the volume and weight of the material placed in each area, the material type, the areal extent where the material was placed, and the date and time when the material was loaded and placed.
  - b. Spatial coverage. To document that the material has been placed over the required footprint, the Contractor shall submit electronic records of the placement of each layer in each area (e.g., bucket positioning figures and electronic bucket data files or spreader barge position tracking). The electronic records shall be accompanied by a summary of the total area (e.g., square yards) of coverage and the volume and type of material placed.
  - c. Construction Manager observations. The Construction Manager will conduct visual observations to verify the material placement activities are conducted by the Contractor in a manner that provides uniform distribution of the cap materials for each location.
  - d. Although compliance verification will not be based on survey comparisons, the Contractor shall perform pre- and post-placement surveys of these areas in accordance with Section 02 21 00 – Surveys.
3. Approval of cap material placement in 12-inch Chemical Isolation Layer areas will be determined by the Construction Manager and will be based on the following:
    - a. Review of the placement reports prepared by the Contractor to verify that the volume of each layer placed meets the requirements described in Part 3.08.O.1.
    - b. Visual observations by the Construction Manager of the placement operations that verify the layers are placed in a manner that provides uniform distribution of the material for each location.
  4. If the requirements of Part 3.08.O.3 are not met, the Contractor shall conduct additional placement operations as directed by the Construction Manager.
  5. Material placed outside of the CCU limits, as determined based on placement records, will not be eligible for payment.
  6. Any material furnished, loaded, transported, handled, or placed that does not comply with this Specification will not be paid for.
- P. In localized areas, where river bottom conditions limit the ability to place a uniform cap layer (e.g., where outcrops form steep-sided ridges or other formations that are not otherwise denoted on the Drawings), the Construction Manager may, at their own discretion, account for such areas during cap thickness compliance evaluation by removing them from the evaluation statistics.
- Q. At minimum, the Contractor shall perform the following tasks as part of the Staged Construction Capping Pilot Tests:
1. The Contractor shall submit a Staged Construction Cap Pilot Test Work Plan as described in Part 1.05.A.4 and other pertinent information in sufficient detail to demonstrate compliance with specified requirements for the Staged Capping Pilot Tests. The Contractor shall revise and re-submit submittals as needed based on review comments from the Construction Manager and regulatory agencies. Construction of the Staged Capping Pilot

Tests shall not commence until the work plan is approved by the Construction Manager and the regulatory agencies.

2. The Contractor shall be responsible for sourcing and procuring the specified cap materials for the Staged Capping Pilot Tests.
3. The Contractor shall perform materials testing and analysis to meet the testing requirements as specified herein. The Contractor shall submit a Borrow Source Characterization Report in accordance with Part 1.05.A.3 for each source and each material type specified for the Staged Capping Pilot Tests (i.e., slope grading fill, armored cap, and modified armored cap).
4. The Contractor shall furnish all labor, materials, services, tools, equipment, and incidentals necessary to remove shoreline and upland vegetation along the path of the proposed Shape Accelerometer Arrays (SAAs). Removal of shoreline vegetation for SAA installation shall be coordinated with the Geotechnical Instrumentation Contractor (to be retained separately by the Company).
5. The Contractor shall furnish all labor, materials, services, tools, equipment, and incidentals necessary to remove and dispose any large debris or boulders encountered along the proposed alignment of the SAAs as directed by the Construction Manager.
6. The Contractor shall be responsible for providing the services of a certified commercial diver to support the installation of the SAAs under the guidance of the Geotechnical Instrumentation Contractor. The commercial diver shall also guide the installation of the settlement plates underwater. The installation of the SAAs and settlement plates by the commercial diver shall be coordinated with the Geotechnical Instrumentation Contractor and the Construction Manager.
7. The Contractor shall furnish all labor, materials, services, tools, equipment, and incidentals necessary to fabricate, assemble, and install a total of fourteen settlement plates including riser pipes and marker buoys as described in the *Staged Capping Test Work Plan* (2018).
8. Elevation survey(s) of the settlement plates will be performed as part of geotechnical monitoring by others under separate contract with the Company. The Contractor shall coordinate and cooperate with others performing geotechnical monitoring and surveying during settlement plate installation.
9. The Contractor shall furnish all labor, supervision, materials, tools, equipment, services, accessories, and appurtenances necessary for, or incidental to, the placement of cap materials within the capping pilot test cells (test cells) in accordance with the *Staged Capping Test Work Plan* (2018) and as described in Parts 3.08J and 3.08K.
10. The Contractor shall be responsible for sourcing and procuring the specified cap materials, transporting the cap materials to the Alcoa East Dock or other approved location; unloading and staging the cap materials; blending and mixing the cap materials with amendments as necessary to achieve specified requirements; loading and transporting cap materials to the locations of placement in the test cells; placing the cap materials in accordance with the approved work plan and Specifications; and performing surveys in accordance with Section 02 21 00 – Surveys.
11. The Contractor shall implement best management practices (BMPs), environmental controls, and other measures to maintain compliance with environmental and health and safety-based monitoring criteria.



12. The Contractor shall closely coordinate equipment mobilization, cap placement, sampling, and surveying activities with others performing monitoring of geotechnical instrumentation in the test cells.
13. The Contractor shall perform all pre-placement and post-placement topographic and hydrographic surveys within and near the test cell areas in accordance with Parts 3.08J and 3.08K and Specification Section 02 21 00 – Surveys.
14. The Contractor shall furnish all labor, supervision, equipment, services, tools, and incidentals necessary to perform supplemental cap material sampling (e.g., core sampling and/or catch pan sampling) during placement in accordance with the Contractor's approved Staged Construction Cap Pilot Test Work Plan to demonstrate compliance with the required cap thicknesses as specified herein and in the *Staged Capping Test Work Plan* (2018).

### 3.09 MISPLACED MATERIALS

- A. When loading and unloading materials, the Contractor shall implement measures to prevent materials from being misplaced on land or in the river during material delivery, storage, loading, unloading, and any other operations.
- B. The Contractor may be required by the Construction Manager to remove any or all backfill material and cap material not placed in accordance with the Drawings.
  1. Should the Contractor, during the execution of the Work, lose, dump, throw overboard, sink, or misplace any material or equipment, the Contractor shall promptly recover and remove the same. The Contractor shall give immediate verbal notice followed by written confirmation of the description, location, and quantity of such obstructions to the Construction Manager, and the Contractor shall mark and buoy such obstructions until the material or equipment is removed unless otherwise directed by the Construction Manager. Should the Contractor refuse, neglect, or delay compliance with this requirement, such obstructions may be removed by the Company, and the cost of such operations may be deducted from any money due to the Contractor or may be recovered from the Contractor's bond. The liability of the Contractor for the removal of a vessel wrecked or sunk without the Contractor's fault or negligence shall be limited to that provided in Sections 15, 19, and 20 of the Rivers and Harbors Appropriation Act of 1899 (33 U.S. Code 410 et seq.).

**- END OF SECTION -**

**SECTION 32 92 19**

**LOAMING AND SEEDING**

**PART 1 – GENERAL**

**1.01 REFERENCED SECTIONS**

- A. Section 01 33 00 – Submittal Procedures
- B. Section 31 23 23 – Capping and Backfilling
- C. Section 32 92 21 – Shoreline Seeding
- D. Section 35 20 23 – Dredging

**1.02 REFERENCES (NOT USED)**

**1.03 DESCRIPTION**

- A. The Contractor shall furnish all labor, materials, equipment, and incidentals required and place loam, finish grade, apply lime and fertilizer, hydraulically apply seed and mulch, and maintain seeded areas as shown on the Drawings and as specified herein, including all areas disturbed.
- B. This Specification applies to the Stanton Road sheetpile excavation area show on the Drawings and may apply to other upland areas.
- C. This Specification does not apply to the restoration of dredged shoreline slopes and excavated floodplain soil areas described in Section 35 20 23 – Dredging. Restoration of these areas shall be completed in accordance with Section 31 23 23 – Capping and Backfilling and Section 32 92 21 – Shoreline Seeding.

**1.04 SUBMITTALS**

- A. The Contractor shall submit, in accordance with Section 01 33 00 – Submittal Procedures, complete shop drawings, materials, and equipment furnished in accordance with this Specification, including seed mixtures and product label information.
- B. Samples of materials shall be submitted for inspection and acceptance upon the Construction Manager's request.

**PART 2 – PRODUCTS**

**2.01 MATERIALS**

- A. Loam shall be fertile, natural soil typical of the locality; free from large stones, roots, sticks, clay, peat, weeds, and sod; and obtained from naturally well-drained areas. It shall not be excessively acidic or alkaline or contain toxic material harmful to plant growth.
- B. Fertilizer shall be a complete commercial fertilizer, 10-10-10 grade for grass areas. It shall be delivered to the Project Site in the original unopened containers, each showing the manufacturer's guaranteed analysis. The Contractor shall store fertilizer so it shall be dry and free flowing.

- C. Lime shall be ground limestone containing not less than 85% calcium and magnesium carbonates.
- D. Grass seed shall be from the same or previous year's crop; each variety of seed shall have a percentage of germination not less than 90, a percentage of purity not less than 85, and a percentage of weed content not more than 1. The mixture shall consist of seed proportioned by weight as follows:
  - 1. Durable Coarse Grass
    - a. 70% KY-31 Tall Fescue (*Festuca arundinacea*)
    - b. 20% Kentucky Blue Grass (*Poa pratensis*)
    - c. 10% Perennial Rye Grass (*Lolium perenne*)
- E. The seed shall be furnished and delivered premixed in the proportions specified above. A manufacturer's certificate of compliance to the specified mixes shall be submitted by the manufacturer for each seed type. These certificates shall include the guaranteed percentages of purity, weed content, and germination of the seed, as well as the net weight and date of shipment. No seed may be sown until the certificates have been submitted.
- F. Mulch shall be a specially processed cellulose fiber containing no growth or germination-inhibiting factors. It shall be manufactured in such a manner that after addition and agitation in slurry tanks with water, the fibers in the material become uniformly suspended to form a homogeneous slurry. When sprayed on the ground, the material shall allow absorption and percolation of moisture. Each package of the cellulose fiber shall be marked by the manufacturer to show the air-dry weight content.

### **PART 3 – EXECUTION**

#### **3.01 APPLICATION**

- A. Unless otherwise shown on the Drawings, loam shall be placed to a minimum depth of 6 inches on all lawn areas and 4 inches in areas indicated to be naturalized.
- B. For all areas to be seeded:
  - 1. Lime shall be applied at the rate of 25 pounds per (lbs/) 1,000 square feet.
  - 2. Fertilizer (10-10-10) shall be applied at the rate of 30 lbs/1,000 square feet.
  - 3. Seed shall be applied at the rate of 5 lbs/1,000 square feet. Grass (coarse) seed shall be applied at the rate of 10 lbs/1,000 square feet.
  - 4. Fiber mulch shall be applied at the rate of 20 lbs/1,000 square feet.
- C. The application of fertilizer and lime may be performed hydraulically in one operation with hydroseeding and mulching. If lime is applied in this manner, the Contractor shall clean all structures and paved areas of unwanted deposits.

### 3.02 INSTALLATION

- A. The subgrade of all areas to be loamed and seeded shall be raked, and all rubbish, sticks, roots, and stones larger than 2 inches shall be removed. Subgrade surfaces shall be raked or otherwise loosened immediately prior to being covered with loam. Subgrade shall be inspected and approved by the Construction Manager before loam is placed.
- B. Loam shall be placed over approved areas to a depth sufficiently greater than required so that after natural settlement and light rolling, the complete Work will conform to the lines, grades, and elevations indicated. No loam shall be spread in water or while frozen or muddy.
- C. After loam has been spread, it shall be carefully prepared by scarifying or harrowing and hand raking. All large stiff clods, lumps, brush, roots, stumps, litter, and other foreign material shall be removed from the loamed area and disposed of. The areas shall also be free of smaller stones, in excessive quantities, as determined by the Construction Manager. The whole surface shall then be rolled with a hand roller weighing not more than 100 lbs/foot of width. During the rolling, all depressions caused by settlement of rolling shall be filled with additional loam, and the surface shall be regraded and rolled until a smooth and even finished grade is created.
- D. Seeding, mulching, and conditioning shall only be performed during those periods within the seasons that are normal for such Work, as determined by the weather and locally accepted practice, as approved by the Construction Manager. The Contractor shall hydroseed only on a calm day.
- E. Schedules for seeding and fertilizing shall be submitted to the Construction Manager for approval prior to the Work.
- F. If lime and fertilizer are to be spread mechanically rather than in one operation with the hydroseeding, then:
  - 1. After the loam is placed and before it is raked to true lines and rolled, limestone shall be spread evenly over loam surface and thoroughly incorporated with loam by heavy raking to at least half the depth of loam.
  - 2. Fertilizer shall be uniformly spread and immediately mixed with the upper 2 inches of topsoil.
- G. Seeding shall be done within 10 days following soil preparation. Seed shall be applied hydraulically at the rates and percentages indicated. The spraying equipment and mixture shall be so designed that when the mixture is sprayed over an area, the grass seed and mulch shall be equal in quantity to the specified rates. Prior to the start of Work, the Construction Manager will be furnished with a certified statement for approval as to the number of pounds of materials to be used per 100 gallons of water. This statement shall also specify the number of square feet of seeding that can be covered with the quantity of solution in the HydroSeeder.
- H. In order to prevent unnecessary erosion of newly graded slopes and unnecessary siltation of drainage ways, the Contractor shall carry out seeding and mulching as soon as satisfactory completion of a unit or portion of the Project. A unit of the work will be defined as not more than 20,000 square feet.
- I. When protection of newly graded areas is necessary at a time that is outside of the normal seeding season, the Contractor shall protect those areas by whatever means necessary (such as straw applied with a tar tack) or by other measures as approved by the Construction Manager.

3.03 SEEDING IN WOODED AND UNGRADED AREAS

- A. For preparation and seeding in wooded areas under this Contract and where no grading is required, all of the specified materials and procedures shall be used, except that no disking shall be performed within the drip line of trees to be preserved. The seed bed shall be prepared by the addition of a thin layer of top soil that is roughly 1-inch deep.

3.04 MAINTENANCE AND PROVISIONAL ACCEPTANCE

- A. The Contractor shall keep all seeded areas watered and in good condition, reseeding if and when necessary until a good, healthy, uniform growth is established over the entire area seeded. The Contractor shall maintain these areas in an approved condition, including performing a minimum of two mowings of the lawn areas until provisional acceptance.
- B. On slopes, the Contractor shall protect against washouts by an approved method. Any washout that occurs shall be regraded and reseeded at the Contractor's expense until a good sod is established.
- C. The Construction Manager will inspect all work for provisional acceptance at the end of the 8-week grass maintenance period upon the written request, which must be received at least 10 days before the anticipated date of inspection.
- D. A satisfactory stand will be defined as a section of grass of 2,000 square feet or larger that has:
  - 1. No bare spots larger than 3 square feet.
  - 2. No more than 10% of total area with bare spots larger than 1 square foot.
  - 3. Not more than 15% of total area with bare spots larger than 6 square inches.
- E. The Contractor shall furnish full and complete written instructions for maintenance of the lawns to the Construction Manager at the time of provisional acceptance.
- F. The inspection by the Construction Manager will determine whether maintenance shall continue in any area of manner.
- G. After all necessary corrective work and clean-up has been completed and maintenance instructions have been received by the Construction Manager, the Construction Manager will confirm in writing the provisional acceptance of the lawn areas. Maintenance of lawns or parts of lawns shall cease on receipt of provisional acceptance.

3.05 GUARANTEE PERIOD AND FINAL ACCEPTANCE

- A. All seeded areas shall be guaranteed for not less than 1 full year from the time of provisional acceptance.
- B. At the end of the guarantee period, inspection will be made by the Construction Manager upon written request submitted at least 10 days before the anticipated date. Lawn areas not demonstrating satisfactory stands as outlined above, as determined by the Construction Manager, shall be renovated, reseeded, and maintained to meet all requirements as specified herein.
- C. After all necessary corrective work has been completed, the Construction Manager will certify in writing the final acceptance of the lawns.

**- END OF SECTION -**

**SECTION 32 92 21**

**SHORELINE SEEDING**

**PART 1 – GENERAL**

**1.01 REFERENCED SECTIONS**

- A. Section 01 33 00 – Submittal Procedures
- B. Section 31 23 23 – Capping and Backfilling

**1.02 REFERENCES**

- A. 6 New York Codes, Rules, and Regulations (6NYCRR) Part 575, Prohibited and Regulated Invasive Species
- B. New York Environmental Conservation Law (ECL) Article 17, Title 21, Nutrient Runoff Law

**1.03 DESCRIPTION**

- A. The Contractor shall seed, fertilize, and install shoreline protection fabric in areas of upland soil removal as shown on the Drawings and described in this Specification.

**1.04 SUBMITTALS**

- A. Seeding Plan. The Contractor shall submit to the Construction Manager for approval a Seeding Plan in accordance with Section 01 33 00 – Submittal Procedures. At a minimum, the Seeding Plan shall include the following:
  - 1. Means by which subgrade will be checked and verified by the Contractor prior to seeding and installation of shoreline protection fabric.
  - 2. Methods, equipment, procedures, and sequence for seeding, fertilizer application, shoreline protection fabric placement, and watering.
  - 3. Seed. Product datasheets, certificates, and source information for proposed seed mixes. The seed certificates shall include the following: botanical name and common name of all species included in the seed mixture; percentage of each species of seed by weight in a mixture; percentage of pure seed for each species included in the mixture; germination percentage; amount of undesirable plant seed present in the mixture; date of packaging; name and address of supplier; and county and state of origin.
  - 4. Fertilizer Certificate. Product datasheet and certificate confirming conformance with this Specification.
  - 5. Shoreline Protection Fabric. Submit manufacturer product data, as well as delivery, handling, storage, installation, and repair methods.
  - 6. A maintenance and inspection schedule.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. The Contractor shall ensure fertilizer is delivered in manufacturer's standard size bags or cartons showing weight, analysis, and the name of the manufacturer. The Contractor shall store as approved by the Construction Manager.
- B. The Contractor shall ensure seed is delivered in vendor's unopened packages bearing labels showing vendor's name and seed analysis by weight.
- C. The Contractor shall store all seed at the Project Site in a cool, dry place at locations approved by the Construction Manager. The Contractor shall replace any seed damaged during storage.
- D. The Contractor shall store seed in weather- and rodent-proof enclosures.

**PART 2 – PRODUCTS**

2.01 SHORELINE PROTECTION FABRIC – SHORELINE SLOPE AREAS

- A. Coir Fiber Fabric shall be Coir Mat 700 or approved equivalent.

2.02 SEED

- A. Seed shall be as follows:
  - 1. Riparian Buffer Mix: ERNMX-178 Riparian Buffer Seed Mix or approved equivalent.
  - 2. Cover Crop: *Secale cereale* or approved equivalent.
  - 3. Wetland Seed Mix: ERNMX-122 FACW Meadow Mix or approved equivalent.
- B. All seed shall have the proper stratification or scarification, in accordance with the producer's instructions, to break seed dormancy.
- C. Seed mixtures should be delivered in original sealed containers. Seed in wet, torn, or otherwise obviously damaged packaging are not acceptable. The Contractor shall label containers with the following information: analysis of seed mixture; percentage of pure seed by species; percentage of weed seed; year of production; net weight; date tagged and location; percentage of germination; and name and address of distributor.

2.03 FERTILIZERS

- A. Fertilizer mixes and rates of application shall be made based on laboratory testing of the backfill and the recommendations of the Cornell Cooperative Extension.

2.04 WATER

- A. Water shall be from a source approved by the Construction Manager.

**PART 3 – EXECUTION**

3.01 INSPECTION

- A. The Contractor shall verify the prepared soil base is ready to receive the Work described in this Specification.

3.02 PREPARATION – SUBGRADE

- A. The Contractor shall prepare subgrade to eliminate uneven areas and low spots. The Contractor shall maintain lines, levels, profiles, and contours. The Contractor shall make changes in grade gradual and blend slopes into level areas.
- B. The Contractor shall remove surface debris, roots, vegetation, lumps, and stones larger than 1 inch. The Contractor shall remove foreign materials, weeds, and undesirable plants and their roots.
- C. The Contractor shall scarify subgrade to a depth of 3 inches where topsoil will be placed. The Contractor shall repeat cultivation in areas where equipment, used for hauling and spreading topsoil, has compacted subsoil.

3.03 SEEDING

- A. Unless otherwise approved by the Construction Manager, seeding shall only occur immediately after approval of backfill placement by the Construction Manager.
- B. The Contractor shall not apply seed if the ground is frozen.
- C. Seeding shall not be performed when the temperature may drop below 35 degrees Fahrenheit (°F) or rise above 90°F.
- D. The Contractor shall provide notice to the Construction Manager at least 48 hours prior to seeding.
- E. The Contractor shall schedule topsoil placement to permit seeding operations under optimum conditions during normal planting seasons.
- F. The Contractor shall use the seed mixes specified in Part 2.02 unless alternative mixtures and application formulae have been approved by the Construction Manager. Seed shall be applied as follows, unless otherwise approved by the Construction Manager:
  - 1. Wetland Seed Mix and Cover Crop shall be used in the Floodplain Removal Area at unnamed tributary at Transect T27N.
  - 2. Riparian Buffer Mix and Cover Crop shall be used in other Floodplain Removal Area and disturbed shoreline slopes.
- G. Seeding rates shall be as follows, unless otherwise approved by the Construction Manager:
  - 1. 20 pounds per acre for the Riparian Buffer Mix
  - 2. 30 pounds per acre for the Cover Crop
  - 3. 20 pounds per acre for the Wetland Seed Mix
- H. Seed shall not be applied when wind conditions are such that materials would be carried beyond designated areas or that materials would not be uniformly applied and when wind velocity exceeds 15 miles per hour.
- I. Seeding activities shall not be carried out on days with heavy precipitation that may result in the washing out of seed.



- J. The Contractor shall immediately notify the Construction Manager if conditions are encountered that prevent seeding.
- K. The Contractor shall apply seed in a way that ensures the entire area receives seed. The Contractor shall reseed areas where gaps in the seeded areas exceed 4 square feet.
- L. The Contractor shall lightly rake seeded areas within 12 hours to ensure proper soil-seed contact.
- M. The Contractor shall not seed areas inundated by water.
- N. The Contractor shall apply fertilizer if recommended by the Cornell Cooperative Extension. Fertilizer application (if any) shall be performed in compliance with the requirements of the Nutrient Runoff Law under New York ECL Article 17, Title 21.
- O. Seeding shall overlap adjoining vegetation by at least 12 inches for upland areas and 24 inches on shoreline areas. The Contractor shall water seeded areas to promote seed germination and growth. The Contractor shall avoid creating rills and furrows as a result of watering and repair and reseed any rills and furrows resulting from overwatering.
- P. The Contractor shall mark seeded areas to prevent intrusion from foot traffic and equipment.

#### 3.04 SHORELINE PROTECTION FABRIC

- A. The Contractor shall install shoreline protection fabric where upland removal occurs as shown on the Drawings.
- B. Shoreline protection fabric shall be installed after seeding is accepted by the Construction Manager.
- C. The Contractor shall notify the Construction Manager at least 3 work days prior to the installation of shoreline protection fabric.
- D. The surface shall be free of rocks, clods, sticks, and grass prior to fabric installation. Fabric shall be placed to have good contact with the soil.
- E. The Contractor shall install shoreline protection fabric as depicted on the Drawings and as described herein.
- F. The Contractor shall lay shoreline protection fabric loosely and stake or staple the fabric to the slope to maintain direct contact with the soil. The fabric shall not be stretched during installation.
- G. The Contractor shall install the fabric blankets vertically from top of slope to bottom of slope.
- H. The Contractor shall place the shoreline protection fabric to avoid existing trees and tree stumps.
- I. The Contractor shall install the shoreline protection fabric in a controlled manner. The Contractor shall install wood stakes as the fabric is unrolled down the slope. The fabric shall not be allowed to roll down the slope without control.
- J. The Contractor shall install the shoreline protection fabric such that upstream panels overlap with downstream panels.

- K. The Contractor shall bury and anchor the top of slope and toe of slope portions of the fabric as depicted on the Drawings.

### 3.05 SEQUENCING

- A. The Contractor shall complete backfilling and topsoil placement of floodplain removal areas and upland removal areas in accordance with Section 31 23 23 – Capping and Backfilling and as shown on the Drawings.
- B. The Contractor shall seed areas prior to installing the shoreline protection fabric.
- C. The Contractor shall install shoreline protection fabric as soon as possible following upland soil removal and seeding to prevent erosion.

### 3.06 MAINTENANCE – SEEDED AREAS

- A. The Contractor shall maintain the seeded areas for a period of one full growing season following seeding. Maintenance responsibilities begin immediately after seeding and continue for one full growing season after the Construction Manager has accepted the seeding.
- B. The Contractor is responsible for maintaining the seeded vegetation for one full growing season, including control of herbivores and other vectors that threaten the establishment of the seeding. The Contractor shall remove undesirable plant material that interferes or inhibits the growth of the plants installed by the Contractor. The Contractor shall take necessary action to correct and restore the unacceptable areas.
- C. The Contractor shall maintain vegetative cover by watering, fertilizing, weeding, and reseeding. In addition, the Contractor shall control prohibited and regulated invasive plant species listed in 6NYCRR Part 575, preferably by physical removal. Restricted hand application of glyphosate, subject to the appropriate limitations of local and state regulations, is acceptable during mid- to late-summer and fall, though only with the approval of the Construction Manager.
- D. The Contractor shall repeat watering weekly for at least 4 weeks after seeding if natural rainfall is less than 1/ inch per week.
- E. The Contractor shall reseed areas that are unacceptable during the 1-year maintenance period. Bare areas greater than 4 square feet shall be reseeded with the specified seed mix.
- F. During the growing season, the Contractor shall conduct corrective action and maintenance within 30 days to address unacceptable areas if notified by the Construction Manager.
- G. The Contractor shall notify the Construction Manager 48 hours prior to and following any maintenance activity.
- H. Approval of seeded areas will be by the Construction Manager at the end of the growing season the year after seeding. Approval will be provided if all requirements have been met, including the following:
  - 1. Seed areas are properly established.
  - 2. Turf is free of eroded, bare, or dead spots and free of prohibited and regulated plant species.

3.07 CLEANING

- A. The Contractor shall perform cleaning during construction and upon completion of the Work.
- B. The Contractor shall remove all excess materials, soil, debris, and equipment and repair any damage resulting from the operations.
- C. The Contractor shall clean up soil, mulch, broken sod, or other debris spilled and dispose of deleterious materials.
- D. The Contractor shall take precautions and prevent misplaced seeding slurry on structures, signs, guardrails, fences, utilities, or other surfaces not specified to be seeded. Where misplacement occurs, the Contractor shall remove seeding slurry to the satisfaction of, and by means approved by, the Construction Manager.

**- END OF SECTION -**

**SECTION 35 02 00**

**MARINE EQUIPMENT AND MARINE TRAFFIC CONTROL**

**PART 1 – GENERAL**

**1.01 REFERENCED SECTIONS**

- A. Section 01 14 00 – Work Restrictions
- B. Section 01 33 00 – Submittal Procedures
- C. Section 31 23 23 – Capping and Backfilling
- D. Section 35 20 23 – Dredging

**1.02 REFERENCES**

- A. U.S. Coast Guard (USCG) Regulations
- B. 33 Code of Federal Regulations (CFR) – Navigation and Navigable Waters

**1.03 DESCRIPTION**

- A. The Contractor shall furnish labor, materials, and equipment necessary to provide, operate, track, and maintain all vessels and marine equipment necessary to perform the Work, inspect marine equipment, and control and coordinate marine traffic in the work area designated on the Drawings and in accordance with Section 01 14 00 – Work Restrictions.

**1.04 SUBMITTALS**

The Contractor shall submit the following to the Construction Manager in accordance with Section 01 33 00 – Submittal Procedures:

**A. Pre-Construction**

- 1. Vessel List. The Contractor shall submit a list of all the Contractor's proposed vessels, including marine construction and ancillary support vessels, to the Construction Manager. The list shall also include all vessels proposed by subcontractors. Ullage tables (i.e., displacement table) for each material transport scow or barge shall also be provided.
- 2. Marine Equipment Safety Inspection Report. The Contractor shall prepare and submit a Marine Equipment Safety Inspection Report, including photographs, for all the Contractor's and subcontractor's vessels to the Construction Manager for acceptance prior to mobilization of the individual pieces of equipment to the Project Site and prior to each construction season. Reports shall be prepared by an independent licensed marine surveyor whose credentials have been submitted to the Construction Manager for written approval in advance of the first Marine Equipment Safety Inspection Report. The Marine Equipment Safety Inspection Report is a requirement that applies only to those Project vessels longer than 25 feet and all tow boats, push boats, and tug boats, regardless of length. Each report shall detail the inspection conducted by the marine surveyor, including photographs and a statement regarding the vessels' stability, seaworthiness, conformance to USCG regulations and requirements, considering its intended role and functions, and its

ability to perform the intended roles and functions in conducting the Work. All deficiencies must be remedied by the Contractor, and the vessel must be re-inspected, if necessary, and approved by the marine surveyor before mobilization of the individual pieces of equipment to the Project Site.

3. **Anchoring Plan.** The Contractor shall submit an Anchoring Plan to the Construction Manager for review and approval prior to the start of marine work. At a minimum, the Anchoring Plan shall include the locations, methods, procedures, and protocols that will be used to secure the Work-related vessels (including dredges, barges, and other Work vessels) during the Project, including during active Work and non-Work periods; the proposed locations of any temporary mooring and anchoring if the Contractor proposes to transload dredged material from one barge to another barge as described in Section 35 20 23 – Dredging; the locations and procedures for securing vessels during storm conditions and high-flow conditions; and procedures to avoid anchoring in previously capped areas.
4. **Communications and Radio Installation Plan.** The Contractor shall prepare and submit a Communications and Radio Installation Plan detailing the name and model number of the communication devices (e.g., very high frequency [VHF] radios) the Contractor will be providing the Construction Manager. The plan shall include installation requirements; the use of any additional equipment; and the locations where external antennas, antenna towers, power amplifiers, and associated hardware are necessary. If the Contractor plans to conduct any Project communication using a private network that is cell phone-based, the Contractor shall provide the Construction Manager the name of the private network and the name and model number of the communication devices compatible with said private network.
5. **Marine Traffic Coordination Plan.** The Contractor shall provide a Marine Traffic Coordination Plan to the Construction Manager for review and written approval. This plan shall describe how the Contractor will coordinate the movements of its vessels with the movements of other Project-related, commercial, and recreational traffic, as well as the Staging Area operations. This plan shall identify the Marine Traffic Manager responsible for coordinating all the Contractor's on-water work and coordinating on-water traffic with other Project and non-Project vessels. The plan shall also include a description of the approach for establishing buffer zones around work areas and for placing, operating, maintaining, and moving any marker buoys, signage (e.g., wake restriction and speed limit signs), and lights.

**B. During Construction**

1. **Weekly Marine Safety Report.** The Contractor shall provide weekly marine safety reports prepared by the Marine Traffic Manager and submitted to the Construction Manager. Weekly reports shall include a summary of marine-based operations and an up-to-date list of all the Contractor's or subcontractor's vessels on the Project Site. Each weekly report shall include a summary of inspections of each vessel to confirm it is in good working condition for continued and safe operation and is appropriately equipped with mooring lines in good working condition, VHF radios, lighting in accordance with USCG regulations, an adequate number of fire extinguishers, a first aid kit, a throwable Type IV floatation device, and personal floatation devices. In addition, the report shall include a log of all traffic control and emergency communications, including times, vessel identification, location, and activity.
2. **Local Notice to Mariners (LNM).** The Contractor shall provide LNM's with navigation-related information of interest to mariners within and adjacent to the Limits of Work. LNM's shall comply with USCG requirements. At a minimum, the LNM's shall describe Project activities, schedules, and hours of operation; list approximate coordinates of outer bounds of the

on-water work area; list changes to aids to navigation, federal channel navigation restrictions, or any hazards to navigation (if any); and provide provisions for no-wake zones adjacent to work areas. The Contractor shall provide contact information. The Contractor shall update LNMs as necessary, depending on status of work. Draft LNMs shall be submitted to the Construction Manager for review. The Contractor shall be responsible for filing all LNMs with the appropriate authorities.

## **PART 2 – PRODUCTS**

### **2.01 GENERAL VESSEL REQUIREMENTS**

#### **A. Vessels**

1. All marine vessels and associated equipment shall conform to to USCG regulations and requirements.

#### **B. Marine VHF Radios**

1. The Contractor shall provide at least two marine VHF radios per Project vessel that are capable of clearly receiving and transmitting radio communications throughout the Project area.
2. The Company reserves the right to purchase radios and other communication equipment to be managed and maintained by the Contractor for the duration of the Project.

- C. Where applicable, the Contractor shall supply depth-sounding equipment, radar, a corrected compass, and/or any other navigation-safety equipment, charts, maps, and publications required by 33 CFR 164 and 33 CFR 401.

## **PART 3 – EXECUTION**

### **3.01 GENERAL**

- A. The Contractor shall comply with and adhere to all applicable USCG rules and regulations.
- B. The Contractor shall maintain marine equipment and provide safety equipment in accordance with USCG regulations and to the satisfaction of the Construction Manager.
- C. The Contractor shall provide a Marine Traffic Manager responsible for coordinating the Contractor's vessels and other river traffic (Project and non-Project) within and adjacent to the work area. The Marine Traffic Manager must be working whenever Project vessels are operating on the river. This duty may be given to multiple individuals to ensure proper staffing throughout each work day. The Marine Traffic Manager shall be responsible for the following activities:
  1. Coordinating and managing vessel movements, including communication with vessel operators.
  2. Coordinating arrival, departure, loading, unloading, and transport of barges at the Staging Area, including barges transporting dredged material and barges transporting cap/backfill material.
  3. Understanding the location and status of each Project vessel and communicating with the Construction Manager as needed.

4. Preparing barge logs in accordance with Section 35 20 23 – Dredging and Section 31 23 23 – Capping and Backfilling.
  5. Coordinating vessel inspections.
  6. Reporting all near misses and incidents related to marine safety to the Construction Manager.
- D. The Contractor shall establish safe buffer zones and provide, install, and maintain temporary aids to navigation (e.g., lit signage and buoys) as necessary to allow safe passage of Project and non-Project vessels around work areas.
- E. The Contractor shall maintain a minimum of 1 foot of water between the hull and the river bottom for all dredges, material barges, and tow boats.
- F. The Contractor shall immediately report all groundings to the Construction Manager.

### 3.02 EQUIPMENT

- A. The dredge shall be equipped with a dredge bucket positioning system as detailed in Section 35 20 23 – Dredging.
- B. The cap and backfill placement equipment shall be equipped with a positioning tracking system as detailed in Section 31 23 23 – Capping and Backfilling.
- C. A qualified person must inspect dredges, cranes, support barges, or other support equipment before such equipment is entered into service to ensure safe operating condition. The qualified person must have a recognized degree, certificate, or license or professional standing, as well as extensive knowledge, training, and experience in solving problems related to the Work. Inspections must be documented and submitted to the Construction Manager in accordance with Parts 1.04.A.2 and 1.04.B.1.
- D. Tow Boats
1. All tow boats used for propelling barges and other equipment shall be equipped with DGPS navigational equipment, radar, a corrected compass, at least two marine VHF radios, an automatic identification system (AIS) transponder, and depth-sounding equipment, all of which are to be maintained in good operating condition during each tow. The Contractor's tow boats shall be of adequate size for pushing the anticipated load and shall have necessary reserve power for maneuvering with material barges under emergency conditions, as well as for control of material barges adjacent to the Staging Area.
- E. Material Barges
1. The Contractor shall provide and maintain markings on all material barges that clearly indicates the draft of the barge. During the entire period of Work, the Contractor shall provide and maintain sufficient spotlights or floodlights such that the draft markings on the sides of material barges at bow and stern are legible from the tow boat at night and when visibility is impaired. The transport of materials shall be in watertight, structurally sound barges of appropriate dimensions for transport.
  2. Split hull scows are not permitted, even if welded prior to use. Barges shall be in a condition approved by the Construction Manager and shall be free of leaks and other damages.

3. All corners and sides of material barges shall be marked with retro-reflective materials, such that they can be clearly identified by vessels travelling in the river in low-light conditions.
4. All edges of barges shall be clearly painted with highly reflective paint to aid workers in identifying the edges of barges at night.
5. Empty and loaded material barges used in shallow draft areas shall be capable of being maneuvered with small craft that can operate in shallow water while minimizing disturbance of the river bottom.

F. Lighting and Markers

1. All operations performed during the non-daylight hours shall be properly illuminated to allow for the complete performance and inspection of the Work. This shall consist of providing, installing, operating, maintaining, moving, and removing portable light towers and equipment-mounted lighting fixtures for nighttime construction operations. For lighting performance specifications, nighttime operations consist of work that occurs after sunset and before sunrise.
2. Each work night, 30 minutes before sunset, 30 minutes after sunrise, and during periods of restricted visibility, the Contractor shall provide lights according to USCG regulations, for floating plants, ranges, and markers. Lights for buoys that could endanger or obstruct navigation shall also be provided. Lights shall be provided for installed equipment being used to perform the Work, even when it is not in use. The Contractor shall immediately repair any non-functioning lights and shall check all lights at the start of each shift.
3. Lighting shall conform to USCG requirements for location, visibility, and color.
4. Signage, buoys, or flags shall be installed to clearly identify the work areas, vessels, barges, in-water equipment, and other obstructions (e.g., floating or submerged pipelines) to provide proper warning to mariners in accordance with USCG requirements.
5. Prior to the start of Work each season, the Contractor shall provide vessel-control requirements (e.g., no wake or wake restriction signs and speed limit signs), which shall be placed upstream, downstream, and within the Project operational areas as necessary to alert non-Project vessels.
6. The Contractor shall comply with all Private Aids to Navigation regulations and permit requirements regarding navigation, lighting, signage, and marine notifications to the satisfaction of the Construction Manager.

G. Access to Vessels

1. The Contractor shall notify the Construction Manager prior to the mobilization of the individual vessels so the Construction Manager may inspect the Contractor's vessels. All Project vessels longer than 25 feet are subject to this pre-mobilization inspection. Pre-mobilization inspection locations and times shall be determined in coordination with the Construction Manager. The Contractor shall provide the Construction Manager with complete access to its vessels for scheduled and non-scheduled inspections.

H. Pipelines

1. If pipelines are used to transport capping or backfill materials, sediment, or water from areas of the river, pipelines shall be inspected daily, and hydrostatic leak-detection



testing shall be conducted monthly or after any physical damage, pressure variance, or observed wear.

I. Communication Devices

1. The Contractor shall establish a communication system that is capable of communicating clearly at all times with all Project vessels, the Staging Area, and any supplemental work areas. This can be either radio or phone-based communication.
2. If the communication system is radio based, the Contractor shall provide the Construction Manager with a minimum of two new radios that are compatible with the Contractor's communication system. The Contractor shall install and maintain all antennas, power amplifiers, antenna towers, and other associated hardware such that radio communications can be clearly transmitted and received throughout the entire work area for the Project's duration.
3. If the Contractor plans to conduct Project communication using a private phone network, the Contractor shall provide the Construction Manager with four compatible communication devices that can be used with said private network. The Contractor shall be responsible for costs associated with acquisition, activation, maintenance, and monthly usage for the duration of the Work.

3.03 CREW BOAT

- A. All crew transport vessels shall be equipped with working GPS navigational hardware and software.
- B. The Contractor shall provide an operator who possesses an appropriate USCG operator's license for carrying passengers on board.

3.04 MAINTENANCE

- A. Floating plant, scows, coamings, barges, and associated equipment shall be maintained to meet the requirements of the Work, including the prompt repair of leaks.
- B. Preventative Maintenance Program. The Contractor shall have and implement a preventative maintenance program for all marine equipment. The minimum preventative maintenance requirements shall meet the manufacturer's guidelines.

3.05 ANCHORING

- A. Installation and deployment of anchoring equipment shall adhere to USCG regulations.
- B. The Contractor shall remove visible sediment and vegetation from all anchors before leaving the location of anchoring.
- C. Spuds are the preferred methods of anchoring and shall be used for in-river anchoring when possible.
- D. The Contractor must temporarily anchor barges not in transit if the Staging Area is not ready to receive barges for unloading.
- E. No anchoring is permitted in areas where the main channel caps have been placed and accepted as final by the Construction Manager. The Contractor may request an exception to

this requirement on a case-by-case basis with a detailed rationale of why anchoring is required in such area after the completion of capping. Any exceptions shall require prior written approval by the Construction Manager and could require the Contractor to repair any damage to the previously installed and approved cap.

- F. No anchoring is permitted in areas where caps were previously placed as part of the 2005 Remedial Options Pilot Study. The locations of these previously installed caps are shown on the Drawings.
- G. All anchoring systems for Work-related vessels must be kept in proper working order. All anchoring chains and winches shall be inspected prior to deployment each day to ensure proper working order. Repairs and preventive maintenance to equipment shall be made in a timely manner to minimize downtime and loss of production. Repairs shall also be made to ensure the safety of the operation, as well as continue the efficiency of all operating equipment. Inspections of equipment shall be allowed at any time.
- H. The Contractor shall anchor vessels and equipment in a safe and secure manner during storm and high-flow conditions.

**- END OF SECTION -**

**SECTION 35 20 23**

**DREDGING**

**PART 1 – GENERAL**

**1.01 REFERENCED SECTIONS**

- A. Section 00 31 00 – Available Project Information
- B. Section 01 11 00 – Summary of Work
- C. Section 01 14 00 – Work Restrictions
- D. Section 01 31 00 – Project Management and Coordination
- E. Section 01 33 00 – Submittal Procedures
- F. Section 01 35 43 – Environmental Protection
- G. Section 02 21 00 – Surveys
- H. Section 02 81 02 – Transportation and Disposal of Waste Material
- I. Section 05 12 00 – Steel
- J. Section 31 13 13 – Selective Shoreline Vegetation Removal
- K. Section 31 23 00 – Earthwork
- L. Section 31 23 23 – Capping and Backfilling
- M. Section 32 92 19 – Loaming and Seeding
- N. Section 35 02 00 – Marine Equipment and Marine Traffic Control
- O. Section 35 55 29 – Dredged Material Processing and Handling
- P. Section 35 80 00 – Marine Resuspension Control

**1.02 REFERENCES**

- A. U.S. Coast Guard (USCG) Regulations
- B. St. Lawrence Seaway System Regulations

**1.03 DESCRIPTION**

- A. The Contractor shall furnish all labor, supervision, materials, tools, equipment, services, accessories, and appurtenances necessary for, or incidental to, performing all required dredging of sediment and debris, floodplain soil removal, and related Work. The dredging and floodplain soil removal shall be conducted as described in the Specifications, as shown on the Drawings, and based on the electronic Design Dredge Prism XYZ Files. This includes, but is

not limited to, removing sediment to the Required Elevations shown in electronic Design Dredge Prism XYZ Files, removing floodplain soil to the limits shown on the Drawings, placing the dredged material into water-tight dredged material scows, and transporting the scows to the Sediment Processing Area at the Staging Area.

- B. The Contractor's base bid shall be based on mechanical dredging as described herein. The Contractor may provide an alternate approach to dredging as an alternate bid proposal.

#### 1.04 DREDGE PRISM FILES

- A. Dredge Prism Files are electronic files that define the required limits and grades of dredging as shown on the Drawings. The Dredge Prism Files collectively include the following, which are provided with the bid documents:
  - 1. Design Dredge Prism XYZ Files, which are electronic data point files that specify the horizontal (X and Y) and vertical (Z) extent of material to be removed as part of the dredging. The electronic data files contain X, Y, and Z values on a 1-foot by 1-foot basis within the footprint of the targeted dredging area plus adjoining side slope areas. The Design Dredge Prism XYZ Files represent the Required Elevations for the design dredge cut.
  - 2. Overdredge Prism XYZ Files, which are electronic data point files that specify the horizontal (X and Y) and vertical (Z) extent of the Overdredge Allowance. The electronic data files contain X, Y, and Z values on a 1-foot-by-1-foot basis within the footprint of the targeted dredging area plus adjoining side slope areas.
  - 3. Design Dredge Prism Boundary Files which show the lateral extent of the Design Dredge Prism XYZ Files where the dredge cut intersects the design bathymetry surface. The Design Dredge Prism Boundary Files are AutoCAD DXF data files.
  - 4. Overdredge Prism Boundary Files, which show the lateral extent of the Overdredge Prism XYZ Files where the allowable overdredge cut intersects the design bathymetry surface.
- B. The Dredge Prism Files may be revised to account for updated pre-construction bathymetric survey data, to incorporate setbacks approved in accordance with Part 1.05.A.2, or to address other changes during final design. Revised Dredge Prism Files, if any, will be issued to the Contractor by the Construction Manager prior to the start of dredging within a dredge area.
- C. Additional Pass Dredge Prism XYZ Files will be issued by the Construction Manager to the Contractor as needed for areas that require additional pass dredging based on the results of post-dredging sediment sample analysis. The Additional Pass Dredge Prism XYZ Files will represent the Required Elevations for Additional Dredge Pass dredging.

#### 1.05 SUBMITTALS

- A. Pre-Construction
  - 1. Dredge Plan. For each construction season, the Contractor shall submit an annual Dredge Plan to the Construction Manager for review and approval. The Dredge Plan shall be updated each year to include details for the Work planned for the upcoming construction season. The Dredge Plan must be approved by the Construction Manager prior to initiating any Work related to dredging. At a minimum, each Dredge Plan shall include the following items:

- a. Figures showing the proposed layout and extent for each Dredge Management Unit (DMU) along with tables summarizing the area and estimated volume associated with each DMU.
- b. A detailed description of the startup and testing operations that will be implemented by the Contractor to verify proper operation of the dredging equipment, processes, controls, and procedures. This startup plan shall include the following, at a minimum:
  - 1) The DMU where startup and testing operations will occur and the rationale for starting at this location.
  - 2) Testing equipment, instrumentation, and methods during the startup period and a list of the equipment to be used.
  - 3) A staffing plan, schedule, and shift rotations during the startup period.
  - 4) A description of information to be collected and analyzed during the startup period, including, but not limited to the following:
    - a) Bucket positioning data
    - b) Survey data, including bucket positioning validation
    - c) Water quality monitoring
    - d) Production rates, shallow water access, dredge movements, scow loading and transfers, and other operational details
    - e) Procedures for adjusting the Dredge Plan, as necessary, based on information collected and analyzed during the startup period
- c. Details for the equipment that will be utilized to perform the dredging, floodplain soil removal, on-water transport, and related Work. This information shall include manufacturer, number, type, and size of the dredge(s), excavator(s), dredge bucket(s), barges, tow/tug boats, dredged material transport scows, support vessels, containers, and other support equipment with pertinent details for each piece of equipment (e.g., dimension, horsepower, bucket size and type, and crew). Ullage tables (i.e., displacement table) for each sediment transport scow or barge shall also be provided.
- d. Description, dimensions, capacity, drawings, and photographs of the dredge buckets, or equivalent equipment, to be used for dredging. Include a description of the dredge bucket Real-Time Kinematic (RTK) Differential Global Positioning System (DGPS) and dredge cut visualization software to be utilized for removal, including manufacturer, make, and model. Include details of the equipment/systems for monitoring bucket closure. Include measures to be used to minimize the entrainment of excess water and minimize resuspension during dredging.
- e. Procedures for verification of the Dredge Bucket Positioning System (DBPS) described in Part 2.01.B.
- f. Proposed approach for deployment of equipment and personnel, including mobilization of dredges, barges, and other ancillary equipment to the Project Site, and daily deployment of personnel and vessels.

- g. Proposed means and methods for cutting and removing the inactive gas piping near Transect 4.5 (T4.5).
- h. Proposed means and methods for dredging in areas with till, boulders, and cobbles.
- i. Planned daily production rates for each operating dredge plant, including planned average cycle times and hours of operation. Include the estimated average hourly in situ sediment removal rate (in cubic yards per hour) for each dredge. Identify assumptions for effective and non-effective time and lost time associated with weather-related delays.
- j. Proposed procedures, means and methods to conduct Interval Dredging within the areas designated as Dredge and Immediate Backfill Areas (D&IB Areas) requiring Interval Dredging as shown on the Drawings within the duration and restrictions provided in Part 3.06.S.
- k. A detailed schedule and sequence in which the Work will be performed for each dredge plant by DMU. If the Contractor requests a change in the order of operations (i.e., where or when dredging will occur) described in the approved Dredge Plan, this request must be in writing and approved by the Construction Manager. Identify any required dredging sequence that conflicts with the requirements contained herein.
- l. Proposed means and methods for accessing shallow draft dredge areas and floodplain soil removal areas, including all areas where dredging is conducted up to the shoreline and any slopes that extend into the adjacent upland. If the Contractor proposes any access dredging of sediment not targeted for removal by the Dredge Prism Files, the Contractor shall provide descriptions of the proposed locations, depths, and schedule for access dredging, the estimated quantity of material to be removed, drawings displaying the extents of the access dredging area, details for equipment to be utilized, and a description of the proposed methods for performing the Work. Any proposed access dredging will be subject to review and approval by the Construction Manager prior to commencing dredging operations.
- m. Proposed methods for transporting dredged material (including floodplain soils) to the Staging Area. Include a description and the number, type, and sizes of barges, scows, and other vessels for dredged material transport, including debris.
- n. Proposed approach for providing complete coverage of the areas to be dredged, including sufficient dredge bucket overlap to ensure there are no gaps between bucket placements. Detail the amount of bucket overlap proposed for each bucket type. Provide example bucket footprint layouts showing the number, size, orientation, and location of each bucket set for each of the different bucket sizes for the relevant lane width.
- o. Proposed methods for minimizing the extent of overdredging while achieving the Required Elevations. Include procedures for dredging within dredge tolerances as specified herein. Include methods to provide quality control during dredging with a description of location control equipment.
- p. Proposed methods, procedures, and equipment for debris removal during dredging, including the segregation and transport of debris that may be encountered during dredging.
- q. Proposed methods, procedures, and equipment for clearing vegetation and debris in floodplain soil removal areas, including the segregation and transport of debris.

- r. Proposed erosion and sedimentation control measures for upland areas disturbed during the floodplain soil removal activities and where dredge cuts extend into the adjacent upland areas.
  - s. Proposed methods for avoiding, protecting, or removing and replacing public and private utilities, including setbacks. Include the procedures for locating and protecting any utilities that could be encountered and impacted by the Work.
  - t. A description of procedures that will be implemented to minimize downtime between shift changes.
  - u. A description of contingent measures to address odors that may occur during dredging or transport of sediment or debris.
  - v. A detailed description of all equipment, operational procedures, and best management practices that will be used to prevent possible impacts to previously dredged areas immediately downstream of or adjacent to DMUs where dredging is being conducted.
  - w. A detailed description of means and methods, best management practices, and contingency response measures to be implemented to minimize sediment resuspension during dredging and debris removal to comply with water quality requirements and meet the requirements of Section 01 35 43 – Environmental Protection.
  - x. A detailed description of the turbidity control systems to be employed during all debris removal, dredging, and backfilling operations and details how the turbidity control system will be arranged relative to the dredge and material transport scows.
  - y. A description of the proposed methods and procedures the Contractor will implement to make field determinations of the type of material being dredged, including, but not limited to, field characterizations of clay, debris, silt, sand, gravel, cobbles, riprap, and bedrock. In addition, describe proposed methods and procedures the Contractor will implement to provide the Construction Manager with the ability to visually inspect areas for the presence of Clay or Hard Bottom if encountered in accordance with Part 3.06.R.
  - z. A description of best management practices that will be implemented to limit emissions of polychlorinated biphenyls (PCBs) into the air during dredging operations, dredged material transport, and staging of loaded barges.
  - aa. A description of how sediment accumulation on the outside of a barge will be prevented and how all visible sediment will be removed from the outside of barges prior to leaving the dredge area and before return to dredge area after offloading at the Staging Area.
2. Proposed Setbacks. The Contractor shall submit proposed setback locations and distances where the Contractor can demonstrate that dredging operations cannot be implemented safely or where the Contractor believes that dredging operations cannot be implemented without compromising the integrity of public or private structures or utilities located in or along the banks of the river. The Contractor's submittal shall include a drawing or drawings showing the proposed setback location and distance, along with a detailed description of the rationale for each proposed setback. The proposed setbacks will be subject to review and approval by the Construction Manager and may require consultation with the U.S. Environmental Protection Agency and the utility or structure owner as part of review.

3. Dock and Private Structure Plan. The Contractor shall submit a Dock and Private Structure Plan to the Construction Manager for review and approval in accordance with Section 01 33 00 – Submittal Procedures. The Dock and Private Structure Plan shall show the locations (including coordinates) for all docks and private structures that require removal or protection as necessary to complete the Work. The plan shall describe the approach to remove or protect the dock and private structures as necessary complete the Work. The plan shall, at a minimum, detail the following information for each dock or private structure that needs to be removed or relocated: the existing condition including documentation photos or video above and below water; the proposed removal and relocation method; proposed methods for removing adhered sediment and vegetation; proposed storage location; and the proposed removal/relocation date. The Contractor will not be responsible for replacement of removed structures but shall be responsible for coordinating with the Construction Manager to facilitate that work by others.
  4. Notice of Intent to Dredge. Prior to commencement of the marine Work on this Contract, the Contractor shall submit written notice of the intent to begin operations to the USCG to file in the Local Notice to Mariners and all other notices required by law. This notification must be given in sufficient time so it appears in the Notice to Mariners at least 2 weeks prior to the commencement of dredging each construction season. A copy of the notification shall be provided to the Construction Manager.
- B. During Construction
1. Daily Dredge Reports. For each 24-hour period of dredging operations (midnight to midnight, local time), the Contractor shall prepare and submit a Daily Dredge Report. The Daily Dredge Reports may be included as a component of the Daily Activities Report described in Section 01 31 00 – Project Management and Coordination. These reports shall be submitted to the Construction Manager the day following the 24-hour period covered by the report. At a minimum, the report shall include:
    - a. Description of general Work activities.
    - b. Description and details of the daily quality control checks of all dredging equipment and positioning system sensors.
    - c. The stop and start station for each day's dredging.
    - d. Barge Trip Logs, including the date, the scow number and name; cumulative Project scow trip number; pre-load draft (all four corners); DMU where scow was loaded; dredge number/name loading scow; type of material loaded in the scow (i.e., sediment, debris, water, and vegetation); estimated quantity of material in the barge; estimated volume of water; loaded draft (all four corners); freeboard; unloaded draft (all four corners); time of arrival at the Staging Area; barge condition prior to and after unloading and any changes to the barge's condition; and time of departure from the Staging Area.
    - e. Location of dredging operations, hours of dredge time, total area dredged, actual daily production rate, and name of dredge operator(s).
    - f. Daily and cumulative area, in situ volume, and approximate weight (measured by barge displacement or other approved method) dredged to date for the Project.
    - g. Description and estimated quantity of debris removed from the dredge area.
    - h. Daily surveys to show the progress of dredging activities, including the daily export of XYZ files from the HYPACK System (or equivalent) and processed figures in AutoCAD



Civil 3D (2014) format or compatible Digital Terrain Model (DTM) of the survey to show the dredge progress for the day with calculations of the day's dredge volume to the nearest cubic yard.

- i. Equipment performance, maintenance, hours of downtime, and cause(s) of downtime.
  - j. Delays encountered and relevant details of the delay, such as the cause, resolution, and measures implemented to avoid similar delays in the future and to make up lost time if necessary.
  - k. Any loss of material, accidents, or other incidents that impacted normal operations.
  - l. Any measures taken in response to exceedance of environmental monitoring compliance standards in accordance with Section 01 35 43 - Environmental Protection.
2. Utility Notification. Written documentation shall be submitted to the Construction Manager detailing the utility notification including the time, date and name of the utility contact in accordance with Part 3.03.B.
3. Progress and Final Surveys
- a. The Contractor shall provide Progress Surveys to document dredge progress per Section 02 21 00 – Surveys.
  - b. The Contractor shall provide a final post-dredge survey for approval per Section 02 21 00 – Surveys to verify completion of dredging to the Required Elevations in accordance with Part 3.06.T and before placing backfill material on the post-dredge surface in accordance with Section 31 23 23 – Capping and Backfilling.

#### 1.06 PERMITS AND WORK RESTRICTIONS

- A. The Contractor shall comply with all state, federal, and local permits obtained by or applied for by the Company as outlined in Section 01 11 00 – Summary of Work. The Contractor shall also comply with all permits obtained directly by the Contractor as required and necessary to complete the Work.
- B. The Contractor shall comply with work restrictions specified in Section 01 14 00 – Work Restrictions.

#### 1.07 PROJECT SITE AND SUBSURFACE CONDITIONS

- A. Data and information from previous investigations are available for reference as described in Section 00 31 00 – Available Project Information.
- B. The results of prior surveys and investigations are indicative of general conditions at their respective locations considering the sampling and survey equipment employed. Variations in the properties of the materials are to be expected. Information regarding the physical and chemical properties of materials to be removed or otherwise associated with the Work is provided in the supplemental reference information identified in Section 00 31 00 – Available Project Information. The information is based on field investigation and laboratory testing of the materials. The data and results of prior surveys and investigations reflect available information at the time of data collection, are approximate, and may have changed since the time of data collection. Although the results of such investigations are considered generally representative of conditions at their respective locations at the time of the investigation, local variations in the

materials are to be expected and, if encountered, shall not be considered materially different within the purview of the Contract.

- C. The Contractor shall field verify the locations of utilities within the work areas, including, but not limited to, those shown on the Drawings. The Contractor shall coordinate a utility locate service and coordinate utility identification and location with the owner of each utility to check all dredge areas.

## **PART 2 – PRODUCTS**

### **2.01 DREDGING PLANT AND EQUIPMENT**

- A. At a minimum, the dredging plant and equipment shall meet the following requirements:

1. The dredging equipment shall be capable of making a flat cut to minimize the amount of non-target materials removed during dredging. In addition, the dredging equipment shall be designed to remove sediments at near in situ densities and minimize the amount of water contained in the dredge bucket and placed within the barge.
2. The Contractor shall use mechanical dredging equipment with an enclosed clamshell bucket system as approved by Construction Manager for all contaminated sediment dredging. Dredge buckets of various sizes, types, and configurations shall be provided as necessary to maximize effectiveness based on the dredge cut thicknesses and different substrate conditions anticipated to be encountered. In areas with till, cobbles, and other Hard Bottom areas, the Contractor may propose using a different type of dredge bucket subject to approval by the Construction Manager for proposed access dredging.
3. Dredge buckets must include monitoring capabilities to inform the dredge operator if the bucket is not completely closed. The dredge bucket shall be designed to maintain enclosure of sediments to minimize, to the maximum extent practical, the generation of suspended sediments during bucket lowering, closing, and raising in the water column.
4. The dredging equipment shall be adequately sized and capable of removing sediment to the full extent and Required Elevations identified in the Design Dredge Prism XYZ Files as part of the initial design cut dredging pass and additional dredge passes that may be required based on post-dredge verification sampling.
5. The floating plant, scows, coamings, barges, and associated equipment shall be maintained to meet the requirements of the work, including the immediate repair of leaks, and comply with USCG requirements.
6. The dredging plant and equipment shall meet the requirements detailed in Section 35 02 00 – Marine Equipment and Marine Traffic Control.

- B. Dredge Bucket Positioning System (DBPS)

1. The Contractor shall have qualified positioning equipment technical support personnel on the Project Site whenever dredging activities take place. Qualifications and experience of these individuals shall be supplied to the Construction Manager for approval.
2. The DBPS shall be capable of the following:
  - a. Inputting and presenting the Dredge Prism Files (an XYZ file on a gridded interval of 1 foot by 1 foot). Inputting and presenting the Dredge Prism Files (an XYZ file on a gridded interval of 1 foot by 1 foot).

- b. Recording all excavator sensor information in standard ASCII format or other format approved by the Construction Manager to a hard disc so the position and movements of the excavator can be reviewed at a later date (playback capability).
  - c. Producing plots showing the location where each dredge bucket closing (XYZ) was attempted and if the bucket was closed.
  - d. Showing the dredge operator, in real-time, the depth of material as the bucket takes a bite in relation to the Dredge Prism.
  - e. Using a true three-dimensional computational system to calculate the position of the bucket, taking into account the tilt and list of the dredge platform, as well as the standard positioning sensors.
  - f. Showing the dredge positioning system's error budget allows it to work within the stated vertical and horizontal accuracies. The error budget should include all errors associated with measuring the positioning of the bucket.
3. HYPACK, Inc.'s DREDGEPAK System is an acceptable version of such a DBPS. If the Contractor chooses to use an alternate positioning system, it must be approved by the Construction Manager.
4. The DBPS for each dredge plant shall be verified in the field prior to the scheduled use of the equipment. The equipment verification can be completed on land or on water and shall demonstrate the ability to achieve, monitor, and report these tolerances. The Construction Manager will be present for the operation and must approve the verification procedures. On-land verifications are considered contingent and shall be re-verified once the equipment is on the water and before the equipment is used for dredging. The Contractor must verify its error budget (i.e., quality control check of all positioning sensors to verify that individually and together they operate within an error range that satisfies the error budget requirement) at least one time per day and include it in the daily quality assurance and quality control report.

### **PART 3 – EXECUTION**

#### **3.01 PREPARATION**

- A. The Contractor shall conduct field reconnaissance and survey activities as necessary to plan the Work, identify any potential obstacles, and facilitate development of proposed setbacks and the Dock and Private Structure Plan described in Parts 1.05.A.2 and 1.05.A.3. As part of this effort, the Contractor shall conduct probing, underwater video, or other survey means necessary to identify the presence and extent of foundations, submerged structures, bridge piers, boat launches, or riprap protection around any in-river structures within or adjacent to dredge areas, and establish the horizontal and vertical location where foundations, submerged structures, bridge piers, boat launches, or riprap around in-river structures intersects the sediment surface. The Contractor shall submit all such survey information to the Construction Manager. If approved, the Construction Manager will work with the Engineer to revise the Design Dredge Prism XYZ Files and Overdredge Dredge Prism XYZ Files to account for approved setbacks prior to dredging.
- B. Prior to the start of dredging, the Contractor shall conduct pre-construction surveys in accordance with Section 02 21 00 – Surveys.
- C. Prior to dredging adjacent to the sheet pile wall located along the north shore near Outfall 001 (near Transect 4.5 [T4.5]) and provide the survey information to the Construction Manager.

- D. Prior to dredging in areas designated on the Drawings for the restoration of existing riprap, the Contractor shall conduct survey and probing activities to document the locations, extent, size, and type of riprap shoreline protection materials. The pre-dredging survey information shall be provided the Construction Manager and used as the basis for restoring the riprap after dredging and backfilling.
- E. Prior to dredging adjacent to the sheet pile wall located along the south shore near Stanton Road (near Transect 45 [T45]), the Contractor shall construct a waler system across the full length of the existing sheetpile structure in accordance with the Drawings, Section 05 12 00 – Steel, Section 31 23 00 – Earthwork, and Section 32 92 19 – Loaming and Seeding. The waler system shall be fully installed and inspected by the Contractor and accepted by the Construction Manager prior to dredging adjacent to the sheet pile wall. The Contractor's schedule shall sufficiently plan and account for completing this activity in advance of dredging this area.
- F. Prior to excavation of the floodplain soil removal area located along the north shore near Transect 27.5 (T27.5), the Contractor shall remove the abandoned boat on the shoreline. The approximate location of the abandoned boat is shown on the Drawings. The Contractor shall propose means and methods for the removal, processing, and disposal of the boat for approval by the Construction Manager. The Contractor shall be responsible for removing any regulated materials (e.g., residual fuel, oils, and batteries), as necessary, and for disposing of these materials properly in accordance with applicable regulations. After removal of regulated items, the Contractor shall crush, size, and otherwise process the boat and transport the materials to the Arconic Secure Landfill for disposal. The Contractor shall be responsible for any processing (e.g., sizing) to meet landfill disposal requirements outlined in Section 35 55 29 – Dredged Material Processing and Handling.
- G. Prior to the start of marine construction activities, the Contractor shall implement the cultural resource preservation protocols described in Section 01 14 00 – Work Restrictions.

### 3.02 WORK AREA

- A. The Contractor shall conduct work in such a manner that no removed material (i.e., sediment or debris) is placed or otherwise deposited outside of dredging limits (e.g., existing side channels, basins, docking areas, or other areas).
- B. The Contractor shall conduct a survey of docks, private structures, and property within and adjacent to the work area to review and verify the existing condition of such features prior to beginning Work. These surveys shall include above water and underwater features including sub-structure and foundation materials. Work shall be conducted in a manner to protect the stability of structures within or adjacent to the work area that cannot be removed. The Contractor shall provide advance notice to the Construction Manager when working in and around docks and private structures. The Contractor shall remove docks and private structures as necessary to facilitate dredging to the Required Elevations in accordance with the approved Dock and Private Structure Plan. The Contractor shall remove the docks and private structures in a manner that allows, to the maximum extent possible, the removed feature to be re-constructed by others at a later date. The Contractor shall remove all adhered sediment and vegetation from the removed materials and shall place the removed materials in areas to be determined by the Construction Manager.
- C. Work shall be conducted by the Contractor as presented in the Dredge Prism XYZ Files, Additional Pass Dredge Prism XYZ Files, and as shown on the Drawings and such that shoreline materials adjacent to and upland of the dredge areas are not destabilized and do not enter the dredge areas. Sloughing or erosion of these shoreline areas into the dredge cut is not acceptable either during or immediately following dredging. Shoreline areas above the

upper elevation of the dredge cut that are damaged shall be repaired to pre-Work conditions or as otherwise directed by the Construction Manager.

### 3.03 UTILITIES

- A. The Contractor shall be responsible for identification, location, and protection of all utilities (including submarine cables, sewer lines, water lines, gas lines, overhead lines, private water intakes, and other utilities) prior to and during the Work as detailed herein and in accordance with Section 01 14 00 – Work Restrictions.
- B. The Contractor shall coordinate the Work with public utilities and private companies that have any electric, gas, or other utility lines at the Project Site and shall provide notice to the utility owner at least 7 days before work within 300 feet of a utility or as requested by the utility owner. Written documentation shall be submitted to the Construction Manager documenting the utility notification including the time, date, and name of the utility contact person.
- C. The Contractor shall take precautions against damages that might result from operations near utilities, especially the sinking of dredge spuds and anchors into the channel bottom in the vicinity of underwater utility crossings. If any damage occurs, the Contractor shall suspend construction until the damage is repaired and approved by the utility owner and the Construction Manager. Costs of such repairs and downtime of construction equipment and other related costs or consequential damages shall be at the Contractor's sole expense.
- D. A preliminary review of utilities has been conducted and is shown on the Drawings. Utilities shown on the Drawings are approximate and do not represent exact locations or numbers of utilities and have not been verified with utility owners.
- E. Prior to dredging along the north shore near Transect 4.5 (T4.5), the Contractor shall cut and remove the inactive natural gas piping located within the footprint of the dredge area. The inactive gas piping has been previously cut, vented, and blanked on both sides of the river by the utility owner (refer to reference materials as listed in Section 00 31 00 – Available Project Information for pipeline description and documentation of venting). The approximate location of the inactive natural gas piping is shown on the Drawings. The Contractor shall make a clean cut on both sides of the dredge area and remove the gas pipe from the limits of dredging. The removed piping shall be managed as debris for disposal in the Secure Landfill. The Contractor shall ensure the remaining piping along the north shoreline is cut such that the exposed pipe does not protrude above the ground surface. The remaining piping south of the dredge areas shall be covered in-place with cap material in accordance with Section 31 23 23 – Capping and Backfilling.

### 3.04 EXECUTION OF DREDGING WORK

- A. Prior to the start of dredging within a DMU, the Contractor shall conduct pruning of vegetation along the shorelines, if necessary, as described in Section 31 13 13 – Selective Shoreline Vegetation Removal, as necessary to complete the Work. Pruning operations shall be completed in accordance with all work requirements and restrictions detailed in Section 01 14 00 – Work Restrictions and sufficiently in advance of the dredge such that it does not interfere or conflict with dredging production.
- B. The Contractor shall conduct dredging from upstream to downstream, except as approved by the Construction Manager. Dredging downstream of Transect 6 (T6) may be performed prior to the end of the June 15 biological window applicable to the area between T1 and T6, as described in Section 01 14 00 – Work Restrictions. Other work may be performed from downstream to upstream only if approved or directed by the Construction Manager.

- C. The Contractor shall complete all dredging Work as described herein, in accordance with the Contractor's approved Dredge Plan, and in accordance with Section 01 14 00 – Work Restrictions of Section 01 35 43 – Environmental Protection. Significant changes to operating procedures or equipment, such as proposed dredge production rates or changes to the sequence or duration of Work, must be reviewed and approved by the Construction Manager.
- D. The Contractor shall conduct the Work while minimizing interference with navigation. Work shall be conducted in accordance with Section 35 02 00 – Marine Equipment and Marine Traffic Control.
- E. The Contractor shall implement procedures that minimize sediment resuspension during dredging and debris removal to meet water quality requirements and the requirements of Section 01 35 43 – Environmental Protection. The Contractor shall implement measures to address and control sheens (if any) on the water surface in accordance with Section 01 35 43 – Environmental Protection. Any delays resulting from the Contractor's operations and failure to meet these requirements shall not be cause for extension of the Project schedule or additional compensation from the Company.

### 3.05 DEBRIS REMOVAL

- A. Prior to the start of dredging within a DMU, the Contractor shall perform a debris survey in accordance with Section 02 21 00 – Surveys. The Contractor shall use the debris survey findings to evaluate the locations, types, and sizes of debris and other obstructions and determine whether pre-dredging debris removal is needed to facilitate the dredging operation.
- B. The Contractor's methods for removing debris and obstructions, once identified, shall be approved by Construction Manager prior to commencing removal.
- C. The Contractor shall remove all debris that will interfere with dredging and backfilling operations, including full penetration or retrieval of the dredge bucket. The Contractor shall remove debris and obstructions as necessary to facilitate dredging to the Required Elevations. Debris removal may be conducted prior to dredging or as part of dredging. It is expected that large debris (if present) will require removal prior to dredging.
- D. If debris cannot be removed using the dredge bucket, the Contractor shall be prepared to use and implement alternate procedures and equipment (e.g., grapplers) to remove debris as necessary to facilitate dredging to the Required Elevations.
- E. If debris cannot be removed after multiple attempts, the Contractor shall notify the Construction Manager and request direction on how to proceed.
- F. The Contractor shall not rake the sediment bed during debris removal.
- G. The Contractor shall notify the Construction Manager if debris encountered during debris removal or dredging extends into the riverbank beyond the shoreline. The Contractor shall not remove debris that extends into the riverbank beyond the shoreline unless directed by the Construction Manager.
- H. Removal of debris or obstructions shall not occur outside established work areas unless approved in writing by Construction Manager.
- I. The Contractor shall remove debris from the riverbed in a slow and steady manner to minimize resuspension of sediments.

- J. Debris shall be transported to the Staging Area within a barge or scow approved for such use by Construction Manager. Debris may be transported on deck barges provided that proper controls are used to mitigate the misplacement of debris. Large debris may be transported to the Staging Area in the same scow as dredged sediment but must be segregated within the hold of the scow to allow for unloading separately by the Contractor.

### 3.06 DREDGING

- A. The Contractor shall excavate sediment to the Required Elevations presented in the Design Dredge Prism XYZ Files. In certain areas as shown on the Drawings, the Design Dredge Prism XYZ Files extend into the adjacent upland area to provide stable post-dredge slopes.
- B. The overdredge allowance within the dredge area is 6 inches below the elevations presented in the Design Dredge Prism XYZ Files as represented by the Overdredge Prism XYZ Files. The Contractor shall minimize overdredging to the maximum extent possible. No payment shall be made for the removal, management, transportation, or disposal of material beyond the lateral limits of dredging or beyond the vertical overdredge allowance, unless approved or directed in writing by the Construction Manager.
- C. During dredging, large individual rocks (i.e., larger than approximately 1.5 feet in diameter) may be left in place, although these rocks will need to be repositioned to ensure that all surrounding targeted sediment is removed. Widespread boulder fields or Hard Bottom with boulders would be considered Hard Bottom (i.e., high subgrade) areas subject to verification by the Construction manager in accordance with Part 3.06.R.
- D. The Contractor shall remove and restore shoreline riprap or other slope protection as necessary to facilitate the dredging in accordance with the Specifications and as shown on the Drawings.
- E. The Contractor shall select the dredge equipment and methods to minimize the release of resuspended sediments during dredging and minimize the entrainment of surface water in dredged material.
- F. The Contractor shall not decant water from the dredge bucket into the Grasse River before placing the material into the sediment transport scow. There should be no slowdown in time in between the excavation of the material and deposition of the dredged material into the transport scow.
- G. The dredge bucket shall be placed in a manner as to provide complete horizontal coverage of the area targeted for sediment removal during each dredge pass. With the exception of the Clay and Hard Bottom bucket refusal protocols as defined in Part 3.06.R, bucket placement shall not allow for gaps between bucket placement or skipping planned bucket bite locations. Horizontal coverage shall be documented with output from the DBPS.
- H. The Contractor shall not stockpile dredged material within the river or on the shoreline.
- I. The Contractor shall not use the excavator bucket, a beam, or other equipment to smooth or level the bottom surface; areas not meeting the required dredge cut line shall be re-dredged.
- J. The Contractor shall place dredged material in dredged material transport scows after each dredge attempt regardless of volume of dredged material in the dredge bucket; multiple attempts to refill the dredge bucket are not permitted.
- K. The Contractor shall conduct dredging at an appropriate rate and steadiness to minimize resuspension and minimize potential movement of sediment outside the dredge area.

- L. The Contractor shall immediately notify the Construction Manager if areas of Clay are encountered. Perform dredging in Clay areas in accordance with Part 3.06.R.
- M. The Contractor shall immediately notify the Construction Manager if bucket refusal areas are encountered above Hard Bottom. Perform dredging in Hard Bottom areas in accordance with Part 3.06.R.
- N. The Contractor shall immediately notify the Construction Manager if areas or items of potential historic or archeological significance are encountered in accordance with protocols as defined in Section 01 35 43 – Environmental Protection.
- O. The Contractor shall be responsible for dredging stable internal and external side slopes and meet all internal and external side slope grades as presented in the various Dredge Prism XYZ Files and shown on the Drawings. The Contractor shall maintain a stable slope outside of the DMU boundary in accordance with the Design Dredge Prism XYZ Files and Drawings such that materials from outside of the DMU do not enter the DMU prior to the Construction Manager's acceptance of backfill placement.
- P. At the location of the Border Patrol Marina, near Transect 32.5 (T32.5), the Contractor shall perform dredging within the channel to the marina as shown and described on the Drawings. Dredging within the Border Patrol Marina channel shall be performed in coordination with the Company, the Construction Manager, and the Border Patrol Marina. Dredging in this area shall be scheduled to minimize interference with ongoing marina operations. Dredging in this area is being performed as a courtesy to the Border Patrol and is not shown on the Design Dredge Prism XYZ Files. Dredging in this area shall be performed to the accessible reach of the Contractor's equipment from the main channel. All dredged material removed from this area shall be handled, transported, processed, and disposed with the dredged material removed from other areas of the river. The area dredged within the marina channel will not require backfilling.
- Q. The Contractor's activities shall not cause water column conditions to exceed the water quality criteria detailed in Section 01 35 43 – Environmental Protection. The Contractor shall provide, deploy, and keep operational a resuspension control system(s) during near shore debris removal and near shore dredging operations in accordance with Section 35 80 00 – Marine Resuspension Control. The Contractor shall implement operational controls and best management practices to minimize sediment resuspension and maintain compliance with the water quality requirements. The operational controls and best management practices may include, but are not limited to, the following:
  - 1. Adjusting the rate of the Work to reduce suspended sediment.
  - 2. Optimizing the number of dredge bites that will achieve target dredge depth to increase sediment capture.
  - 3. Controlling the rate of dredging, including the rate of raising and lowering of the bucket through the water, particularly when the bucket is close to the bottom of the river.
  - 4. Not performing excessive and rapid movement of the dredge bucket, such as dragging the bucket on the bottom or re-opening the bucket after initial closure.
  - 5. Conducting pre-dredging removal of debris that could interfere with dredging.
  - 6. Removing debris from the riverbed in a slow and steady manner.
  - 7. Minimizing over-penetration of the dredge bucket to prevent overfilling.



8. Completely closing (to the extent possible) the dredge bucket before it is lifted through the water column.
9. Moving buckets continuously and in the most efficient path to the barge once the bucket breaks the water surface.
10. Conducting vessel operations in a manner to minimize potential resuspension due to vessel propeller wash.
11. Performing dredging operations within a turbidity curtain system.

R. Dredging Procedures in Areas Where Clay or Hard Bottom is Encountered

1. In some locations, targeted dredge material lies over Clay or Hard Bottom conditions (e.g., rock or other hard substrate) that may impact dredging operations and prevent the Contractor from achieving the Required Elevations of a DMU. Where areas with widespread Clay or Hard Bottom conditions are encountered during dredging above the Required Elevations (i.e., high subgrade), the following procedures shall be followed:
  - a. The Contractor shall dig to the Required Elevations of the Design Dredge Prism XYZ Files and Additional Pass Dredge Prism XYZ Files or the top of Clay or Hard Bottom areas, whichever is encountered first.
  - b. If a Clay or Hard Bottom surface is reached prior to the Required Elevations of the Dredge Prism, the Contractor shall complete removal of all material above the encountered Clay or Hard Bottom, mark the bucket location of Clay or Hard Bottom using the bucket positioning software, and notify the Construction Manager. The Contractor shall provide the Construction Manager with a target file with XYZ locations of all buckets where Clay or Hard Bottom was encountered.
  - c. The Construction Manager will confirm the presence of Clay or Hard Bottom and any targeted sediment above the Clay or Hard Bottom based on visual observation or other means. The Contractor shall provide means acceptable to the Construction Manager for the Construction Manager to visually inspect and verify the presence of Clay or Hard Bottom. The Construction Manager will provide direction on how to proceed in these areas if additional removal is necessary.
  - d. The Contractor will be permitted to continue dredging in other portions of the same DMU or the next downstream DMU while the Construction Manager is verifying the presence of Clay or Hard Bottom areas.
  - e. If Construction Manager determines that the area contains sediment that can be dredged, the Contractor shall dredge the area to the Required Elevations. This may require the Contractor to use a different size or type of dredge bucket.
  - f. In areas where the Construction Manager confirms the presence of Clay or Hard Bottom, the Construction Manager will coordinate with the Contractor to determine revised approaches or adjustments to the Dredge Plan that accounts for the observed Clay or Hard Bottom. In these areas, the Contractor shall provide electronic files to the Construction Manager documenting the locations, elevations, and extents where the Clay or Hard Bottom areas are encountered.

S. Dredging Procedures where Interval Dredging will be conducted

1. The Contractor shall conduct Interval Dredging in areas shown on the Drawings. Interval Dredging, surveying, verification sampling, and backfill shall be conducted in accordance with the Contractor's approved work plans.
2. Total duration from the completion of Interval Dredging to the completion of placement of backfill within a given interval shall not exceed 48 hours. Dredging intervals shall not exceed the lane widths noted on the Drawings, and Interval Dredging shall be conducted from upstream to downstream.
3. The Contractor shall monitor surrounding conditions to avoid destabilization of adjacent slopes and structures.
4. The Contractor shall provide notification to the Construction Manager 2 days prior to commencing Interval Dredging in a D&IB area and 12 hours prior to completion of Interval Dredging in each interval.
5. Post-dredge verification surveys shall be conducted following the completion of each interval within a D&IB area as shown on the Drawings. The Contractor shall conduct post-dredge verification surveys during Interval Dredging as detailed in Section 02 21 00 – Surveys and Part 3.06.T.
6. The Contractor shall provide access to dredged intervals for the Construction Manager to conduct verification sampling following survey activities as detailed in Part 3.06.U. Verification sampling results will be used for informational purposes only.
7. Following surveying, verification sampling, and upon receipt of Construction Manager's approval, the Contractor shall immediately backfill the dredged intervals with the appropriate backfill material in accordance with the Drawings and Section 31 23 23 – Capping and Backfilling.
8. In the event that the Contractor prematurely backfills a dredged interval prior to surveying, verification sampling, or receipt of Construction Manager's approval, the Contractor may be required to re-dredge the interval at no additional cost to the Company.
9. Post-backfill verification surveys for compliance shall be conducted following the completion of an entire contiguous D&IB area as shown on the Drawings. The Contractor shall conduct post-backfill verification surveys as detailed in Section 02 21 00 – Surveys.
10. The Contractor shall take all precautions to minimize and/or account for the removal of backfill from a previously completed D&IB area. If survey results indicate that backfill requirements have not been met, the Contractor shall place additional backfill material until achievement of requirements as specified in Section 31 23 23 – Capping and Backfilling.
11. The Contractor shall not commence dredging in the next interval until approval has been received from the Construction Manager to proceed.

T. Dredging Verification

1. The Contractor shall notify the Construction Manager when a DMU is ready for a post-dredge survey and shall allow the Construction Manager to observe the post-dredge survey. The Contractor shall perform a post-dredge survey in each DMU to verify that dredging has achieved the Required Elevations in the Design Dredge Prism XYZ Files and Additional Pass Dredge Prism XYZ Files. Post-dredge surveys shall be performed in accordance with Section 02 21 00 – Surveys.

2. Dredging shall achieve the Required Elevations in Design Dredge Prism XYZ Files and Additional Pass Dredge Prism XYZ Files in 95% or more of the total area dredged in each DMU, excluding areas where Clay or Hard Bottom areas are accepted by the Construction Manager. The Construction Manager will determine if the Required Elevations have been met. This determination will be made by comparing the post-dredging bathymetric survey elevations with the Required Elevations in Design Dredge Prism XYZ Files (or Additional Pass Dredge Prism XYZ Files). The dredge verification evaluation will be conducted by comparing the average value of each 10-foot by 10-foot grid cell from the post-dredge survey dataset with the average value of the required elevation dataset (based on the applicable Dredge Prism XYZ File) in each corresponding grid cell. Field-identified locations where Clay or Hard Bottom (i.e., high subgrade) constrain the depth of dredging, as accepted by the Construction Manager, will be exempt from the dredge verification evaluation. Grid cells will be considered compliant with the design if the average post-dredge elevation is at or below the average dredge prism cutline elevation within the 10-foot by 10-foot grid cell.
3. If more than 5% of the grid cells within a DMU are non-compliant, additional dredging shall be conducted in non-compliant cells to achieve the 95% requirement for the DMU. In addition, if the average elevation of a single 10-foot by 10-foot grid cell is more than 3 inches above the target elevation, that grid cell shall be re-dredged, except for areas where Clay or Hard Bottom (i.e., high subgrade) have been encountered.
4. Field-identified Clay and Hard Bottom, as accepted by the Construction Manager, are considered to have achieved the Required Elevations.
5. The Contractor shall not purposefully avoid dredging any portion of the dredge areas to achieve the 95% tolerance requirement.
6. Following each required additional dredging pass, the Contractor shall perform a post-dredge survey in accordance with Section 02 21 00 – Surveys to confirm that the Required Elevations have been achieved.

U. Post-Dredge Verification Sampling

1. After the Construction Manager confirms that dredging to the Required Elevations is complete, the Construction Manager will collect post-dredge verification sediment samples within each DMU. Analytical data from these samples will be used by the Construction Manager to determine whether an additional dredge pass is required or if backfill material can be placed in the area in accordance with Section 31 23 23 – Capping and Backfilling. It is generally expected that the Construction Manager will provide direction to the Contractor within 10 calendar days after verification sample collection.
2. If additional dredging is required, the Construction Manager will provide the Contractor with an Additional Pass Dredge Prism XYZ File showing the Required Elevations for the additional dredge pass. It is anticipated that additional dredge passes will be designed to target removal of an additional 6 inches of sediment across target footprints unless otherwise directed by the Construction Manager. Any Work conducted during an additional dredge pass shall comply with the requirements detailed in this Specification.

3.07 FLOODPLAIN SOIL REMOVAL

- A. The Contractor shall conduct pre-excavation topographic surveys in accordance with Section 02 21 00 – Surveys to document baseline elevations and conditions of the floodplain soil removal areas and where dredge cuts extend into the adjacent upland areas. The Contractor's

survey shall be performed using a grid spacing as specified in Section 02 21 00 – Surveys. As part of this survey, the Contractor to stake the limits of the floodplain soil removal areas.

- B. The Contractor shall establish and maintain appropriate erosion and sedimentation control for all upland areas disturbed during floodplain soil removal activities and where dredge cuts extend into the adjacent upland areas.
- C. The Contractor shall conduct pre-excavation clearing and grubbing as necessary to facilitate the excavation activities, but such activity shall be minimized to the extent practicable.
- D. The Contractor shall excavate floodplain soils to the extents and depths shown on the Drawings. The over-excavation allowance within the floodplain soil removal areas is 3 inches below the target removal depths shown on the Drawings. The Contractor shall minimize over-excavation to the maximum extent possible.
- E. Floodplain soil removal areas shall be accessed from the water. Any dredging of non-target materials (i.e., access dredging) necessary to facilitate access to the floodplain soil removal areas shall be subject to review and approval by the Construction Manager.
- F. The Contractor shall be responsible for determining the methods and equipment to be used for excavation of floodplain soils.
- G. The Contractor shall be responsible for implementing measures to maintain stable excavations, as necessary.
- H. The Contractor shall load excavated floodplain soil in the same material transport scows used to transport dredged sediment. The Contractor may propose alternate material transport methods subject to approval by the Construction Manager.
- I. The Contractor shall conduct post-excavation topographic surveys in accordance with Section 02 21 00 – Surveys to verify that the floodplain soil excavations have achieved the required removal depths throughout the removal areas shown on the Drawings. The Contractor's survey shall be performed using a grid spacing as specified in Section 02 21 00 – Surveys. The Contractor's survey must be reviewed and approved by the Construction Manager before Work will be considered complete. The Construction Manager will determine if the required removal depths have been met. If high spots remain above the required removal depths, the Contractor shall perform additional excavation to remove such high spots and conduct an additional survey at no additional cost to the Company.
- J. After the Construction Manager confirms that floodplain soil removal is complete to the required removal depths, the Construction Manager will collect post-excavation verification soil samples. Analytical data from these samples will be used by the Construction Manager to determine whether additional excavation is required or if backfill material can be placed in the excavated area in accordance with Section 31 23 23 – Capping and Backfilling. It is generally expected that the Construction Manager will provide direction to the Contractor within 10 calendar days after the post-excavation sampling.
- K. If additional excavation is required, the Construction Manager will provide the Contractor with drawings showing the extent and depth of additional excavation required. Any Work conducted during an additional round(s) of excavation shall comply with the requirements detailed in this Specification.

### 3.08 LOADING MATERIAL TRANSPORT SCOWS

- A. The Contractor shall load material scows evenly, using methods that do not create an unsafe situation or a situation causing spillage or submergence (tipping) of the scow.

- B. The scows used for transport of dredged material and excavated floodplain soils shall be water tight. Any water pumped from the material transport scows shall be treated in the onsite temporary water treatment system. Water shall not be pumped or discharged from the material transport scows directly into waterbodies.
- C. The Contractor shall remove all visible sediment and debris from the outside surface of the material transport scows prior to moving it from the loading location.
- D. The Contractor shall limit the loading of material transport scows to no more than 90% of its capacity to prevent overflow.
- E. Overflow of sediment or water from material transport scows is strictly prohibited.

### 3.09 ON-WATER DREDGED MATERIAL TRANSPORTATION

- A. The Contractor shall place dredged material into water-tight barges and transport the material to the Staging Area as shown on the Drawings. All water must be contained during dredging and transport. Effluent releases from the dredge material barge are prohibited.
- B. Misplaced Material
- C. The Contractor shall collect all dredged materials or debris that may be released from the dredge bucket during transfer from the dredge barge to sediment transport scows. Collected material shall be managed and disposed of in accordance with Section 02 81 02 – Transportation and Disposal of Waste Material and Section 35 55 29 – Dredged Material Processing and Handling. The Construction Manager may elect to stop work activities at the Project Site in the event that the Contractor is not adequately collecting the above referenced materials as determined by the Construction Manager. Any related delays shall not allow the construction schedule to be extended and shall not be reason to increase the Contract price.
- D. Should the Contractor, during the execution of the Work, lose, dump, throw overboard, sink, or misplace any material, dredge, scow, machinery, equipment, or appliance, the Contractor shall immediately notify the Construction Manager and then promptly recover and remove same to the satisfaction of the Construction Manager at no additional cost to the Company.

### 3.10 ANCHORING

- A. The Contractor shall comply with the anchoring requirements specified in Section 35 02 00 – Marine Equipment and Marine Traffic Control.

**- END OF SECTION -**

**SECTION 35 44 00**

**WATERWAY HABITAT FEATURES**

**PART 1 – GENERAL**

**1.01 REFERENCED SECTIONS**

- A. Section 01 33 00 – Submittal Procedures
- B. Section 01 40 00 – Contractor Quality Control
- C. Section 01 66 10 – Material Delivery, Storage, and Handling
- D. Section 02 21 00 – Surveys
- E. Section 02 81 02 – Transportation and Disposal of Waste Material
- F. Section 31 23 23 – Capping and Backfilling
- G. Section 35 20 23 – Dredging
- H. Section 35 55 29 – Dredged Material Processing and Handling

**1.02 REFERENCES**

- A. ASTM International (ASTM)
  - 1. ASTM F541: Standard Specification for Alloy Steel Eyebolts
- B. U.S. Federal Specifications
  - 1. RR-W-410 (Revision H, or most recent) Wire Rope and Strand
  - 2. FF-C-450 (Revision F, or most recent) Clamps, Wire Rope
- C. New York State Department of Transportation (NYSDOT)
  - 1. NYSDOT Standard Specifications (U.S. Customary Units; most recent version shall apply)

**1.03 DESCRIPTION**

- A. The Contractor shall furnish all labor, materials, equipment, tools, and services necessary to construct and install anchored rootwads and rock clusters (also collectively referred to as waterway habitat features) in accordance with the Specifications and as shown on the Drawings.

**1.04 DEFINITIONS**

- A. Approved Connection: An approved connection is one that is free of slack and excess length of rope (of any approved type), rope ends are protected from unraveling, and wire rope clips are tightened to the specified torque.

- B. Bole: The trunk of a tree.
- C. Nominal: A generally accepted value for a dimension or load. Actual dimensions may vary. Nominal loads may be an average.
- D. Rootwad Log: Large woody material that includes an intact rootwad mass connected to a portion of the bole of the tree. Rootwad logs are typically produced by removing an entire tree, including the rootwad mass, from the ground and then removing the limbs and cutting the log to a specified length.
- E. Rootwad Mass: The roots and the flared portion of the tree transitioning between the roots and the bole.

#### 1.05 SUBMITTALS

The following submittals shall be submitted in accordance with Section 01 33 00 – Submittal Procedures.

##### A. Pre-Construction

1. Waterway Habitat Features Work Plan. The Contractor shall submit a Waterway Habitat Features Work Plan, which must be approved by the Construction Manager prior to initiating any assembly or placement of waterway habitat features. At a minimum, the Waterway Habitat Features Work Plan shall include the following:
  - a. Evidence of qualifications that the waterway habitat features installation supervisor has experience in the installation of similar features.
  - b. The procedures for placement of the waterway habitat features, including means of navigational positioning, sequences of work, installation techniques, and coordination with the Contractor's Dredge Plan and the Contractor's Backfilling and Capping Plan, as required by Section 35 20 23 – Dredging and Section 31 23 23 – Capping and Backfilling, respectively.
  - c. Proposed equipment (including description, dimensions, and capacity), methods, and procedures for transport and placement of waterway habitat features.
  - d. A description of how the Contractor will provide for the Construction Manager's access to inspect the materials used in the waterway habitat features prior to and during this Work.
  - e. The details for waterway habitat feature material transport and staging, which shall include, at a minimum, identification of onsite material laydown areas, and the types of equipment and procedures to be used to transport materials from the source to the laydown areas and to the location of placement.
  - f. The procedures for assembling anchored rootwad materials prior to placement.
  - g. Procedures to verify proper waterway habitat features placement locations, including procedures to verify proper placement and methods of survey control. The use of electronic positioning and associated software, including data deliverables, shall be described.

- h. Identification and locations of all waterway habitat feature material sources along with a schedule for procurement and delivery. The Contractor shall include written confirmation that the materials comply with the specified criteria per this Specification.
- i. Rootwad Log: Source site information, including age of material since harvesting, tree species of material (prior written approval is required for tree species not listed in the Specifications or indicated on the Contract Drawings), and written permission for the Construction Manager to gain access to the source site to evaluate materials. Photographic documentation of the proposed materials to be furnished shall be provided, along with any other documentation necessary to verify the materials meet the specified requirements and the Contractor has approvals or permits necessary to use the material.
- j. Wire Rope: Product sheet from manufacturer and/or supplier documenting the product meets all requirements of these Specifications.
- k. Wire Rope Clips: Product sheet from manufacturer and/or supplier documenting the product meets all requirements of these Specifications.
- l. Eye Bolts: Product sheet from manufacturer and/or supplier documenting the product meets all requirements of these Specifications.
- m. Rock Anchors: Product sheet from manufacturer and/or supplier documenting the product meets all requirements of these Specifications. For adhesive anchor systems, provide all shop drawings and anchor strength calculations.
- n. Block Connections: Shop drawings showing the connection details and a list of any proposed alternate materials and connection strength calculations showing the alternate connection detail meets or exceeds the strength provided by the detail on the Drawings.
- o. Stone Blocks: Source site information, including approximate quantity of material available, stone type, typical stone dimensions, gradations/sizing, and photographs of representative materials.
- p. Rock Cluster Boulders: Source location information, including approximate quantity of material available, stone type, typical stone dimensions, gradations/sizing, and photographs of representative materials. A statement from the material supplier indicating the materials meet the referenced NYSDOT specification.

#### 1.06 QUALITY CONTROL

- A. The Contractor shall comply with the requirements of Section 01 40 00 – Contractor Quality Control.
- B. The Contractor shall provide all necessary manufacturer quality control data and certificates, as required herein and at the request of the Construction Manager.

#### 1.07 DELIVERY, STORAGE, AND HANDLING

- A. The Contractor shall deliver, store, and handle all materials, components, and appurtenances required to fabricate waterway habitat features in accordance with Section 01 66 10 – Material Delivery, Storage, and Handling.



## PART 2 – PRODUCTS

### 2.01 MATERIALS

- A. Materials shall meet or exceed the performance requirements and match the material size and type indicated on the Drawings and described in the Specifications or as approved by the Construction Manager. In the event of a conflict between what is indicated on the Drawings or described in the Specifications, the Contractor shall notify the Construction Manager. The Construction Manager shall determine which takes precedence.
- B. Anchored rootwads consist of a tree bole with an intact rootwad mass that is anchored to the river bottom as described in the Specifications and shown on the Drawings. Anchored rootwads shall comply with the Drawings and the following requirements:
  - 1. Not be milled or chemically treated.
  - 2. Have intact bark, unless otherwise approved by the Construction Manager.
  - 3. Include an intact rootwad mass consisting of root fibers that range in size down to a minimum diameter of 1 inch.
  - 4. Have limbs trimmed within 1 inch of the face of the log, unless otherwise approved by the Construction Manager. Limbs do not include the root mass.
  - 5. Conform to the dimensions indicated on the Drawings.
  - 6. Have a reasonably uniform and full rootwad mass; rootwad logs with asymmetrical rootwad masses may be rejected by the Construction Manager.
  - 7. Be sourced from species native to State of New York, such as elm, hemlock, hickory, black locust, honey locust, oak, maple, ash, or beech; other species may be used as approved by the Construction Manager.
  - 8. Be from sound stock and appropriate for structural constructions. The log shall be reasonably straight and uniform, and free of excessive bends, bulges, and limbs that will impede the placement of additional logs in the applicable structure or feature. Rootwad logs exhibiting breakage, rot, splitting, holes, pest infestation, foreign objects/finishes, vandalism, burn, and other damages are not allowed and may be rejected by the Construction Manager.
- C. Wire rope shall comply with the following requirements:
  - 1. Wire rope shall be galvanized with no coating with a minimum nominal breaking strength of 26,600 pounds in accordance with RR-W-410.
  - 2. Wire rope shall meet the applicable construction, material, and testing requirements of RR-W-410.
  - 3. The Contractor shall provide wire rope that is the standard product of a manufacturer regularly engaged in the manufacture of wire rope and essentially duplicates products having been in satisfactory use for at least 3 years prior to bid opening.
  - 4. The Contractor shall furnish sufficient length of wire rope to complete the wire rope connections as shown on the Drawings for the structure and features. The wire rope shall

be wound on reels in a continuous length such that individual lengths of wire rope will be available for use. Splicing of wire rope will not be allowed.

5. Pre-cut lengths are acceptable, but the Contractor shall ensure lengths are suitable for an approved connection. Pre-cut lengths of wire rope that do not meet a sufficient length for an approved connection will be rejected by the Construction Manager at no cost to the Company.
- D. Wire rope clips shall comply with the following requirements:
1. Wire rope clips shall be galvanized drop forged with a Type 1, Class 1 wire rope diameter.
  2. Wire rope clips meet the applicable construction, material, and testing requirements of FF-C-450.
  3. Wire rope clips shall be the standard product of a manufacturer regularly engaged in the manufacture of wire rope clips and that essentially duplicate products having been in satisfactory use for at least 3 years prior to bid opening.
- E. Eye bolts shall comply with the following requirements:
1. Eye bolts shall have a working weight limit of 6,000 pounds in accordance with ASTM F541.
  2. Eye bolts shall be hot dipped galvanized steel for lifting without shoulder.
  3. Eye bolts shall meet the applicable requirements of ASTM F541-12, or most recent.
  4. The Contractor shall provide eye bolts that are the standard product of a manufacturer regularly engaged in the manufacture of eye bolts and that essentially duplicate products having been in satisfactory use for at least 3 years prior to bid opening.
- F. Rock anchors shall comply with the following requirements:
1. The mechanical anchor or adhesive anchor system shall have a minimum 9,800 pounds ultimate pullout capacity as reported by the manufacture or as shown in the anchor system design analysis.
  2. Rock anchors shall be compatible with the specified galvanized steel eye bolts.
  3. Installation of the mechanical anchor or adhesive anchoring system shall be in strict accordance with the manufacturer's recommendations.
  4. Mechanical anchors shall be internally threaded four-way expansion anchors (vibration-resistant expansion anchors).
  5. Mechanical anchors shall be zinc coated and have a Class 2B thread fit.
  6. Mechanical rock anchors or a rock anchor adhesive system shall be a standard product of a manufacturer regularly engaged in the manufacture of rock anchors or rock anchor adhesive systems and that essentially duplicate products having been in satisfactory use for at least 1 year prior to bid opening. The Contractor shall provide the manufacturer's qualifications as specified in Part 1.05.

G. Stone blocks shall comply with the following requirements:

1. Stone blocks shall match the size, weight, and material indicated on the Drawings and described in the Specifications or as approved by the Construction Manager. In the event of a conflict between what is indicated on the Drawings or described in the Specifications, the Construction Manager shall determine which takes precedence.
2. Stone blocks shall be hard, durable, and free of cracks.
3. Acceptable stone types include limestone, granite, basalt, gneiss, or others as approved by the Construction Manager.

H. Rock cluster material shall comply with the following requirements:

1. Rock cluster material shall be hard, durable material from either an approved offsite source (subject to the borrow source quality requirements specified in Part 3.02 of Section 31 23 23 – Capping and Backfilling) or from the Grasse River after removal from within the required dredge prism boundary.
2. If rocks removed from the Grasse River dredge areas are used as the source of rock cluster material, they shall be decontaminated using high-pressure power washing and brushing (if necessary) to remove all adhered sediment and other solids to the satisfaction of the Construction Manager. Decontamination shall be performed in a contained area at the Staging Area where all water and solids can be collected, managed, and disposed of as contaminated material in accordance with Section 02 81 02 – Transportation and Disposal of Waste Material and Section 35 55 29 – Dredged Material Processing and Handling.
3. Rock cluster material shall be tested in accordance with Part 3.03.D of Section 31 23 23 – Capping and Backfilling.
4. Rock cluster material shall be run of bank rounded or sub-rounded stone with the following gradation:

U.S. Sieve Size	Percent Passing (Dry Weight Basis)
4-inch	100%
3-inch	90 – 100%
2-inch	0 – 15%
No. 200	0 – 0.7%

### PART 3 – EXECUTION

#### 3.01 FABRICATION AND INSTALLATION

A. Anchored Rootwad

1. The Contractor shall pre-assemble the anchored rootwad on land or on a barge prior to installation per the following requirements:

- a. Connect stone blocks to the rootwad log using an approved connection as shown on the Drawings and per the Contractor's approved Waterway Habitat Features Work Plan and Construction Manager-approved shop drawings.
- b. Finish all connections prior to placement in the water.

2. Installation

- a. The Contractor shall install the rootwad log as shown on the Drawings and per the Contractor's approved Waterway Habitat Features Work Plan.
- b. The Contractor shall place rootwad logs with stone blocks attached as shown on the Drawings.
- c. The Contractor shall minimize substrate disturbance during installation.
- d. Following placement, the Contractor shall survey rootwad locations, in accordance with Section 02 21 00 – Surveys.

B. Rock Clusters

1. The Contractor shall place rock clusters on the finished grade at the location and to the dimensions shown on the Drawings and as detailed in the approved Waterway Habitat Features Work Plan.
2. Rock clusters shall not be anchored.
3. The Contractor shall minimize substrate disturbance during placement.
4. Following placement, the Contractor shall survey rock cluster locations, in accordance with Section 02 21 00 – Surveys.

**- END OF SECTION -**

**SECTION 35 55 29**

**DREDGED MATERIAL PROCESSING AND HANDLING**

**PART 1 – GENERAL**

**1.01 REFERENCED SECTIONS**

- A. Section 00 31 00 – Available Project Information
- B. Section 01 14 00 – Work Restrictions
- C. Section 01 31 00 – Project Management and Coordination
- D. Section 01 32 16 – Construction Progress Schedule
- E. Section 01 33 00 – Submittal Procedures
- F. Section 01 35 43 – Environmental Protection
- G. Section 01 71 13 – Mobilization and Demobilization
- H. Section 01 72 00 – Decontamination of Equipment
- I. Section 02 72 00 – Water Pretreatment
- J. Section 02 81 02 – Transportation and Disposal of Waste Material

**1.02 REFERENCES**

- A. Applicable references for the Work specified herein include, but are not limited to, the following:
  - U.S. Environmental Protection Agency (EPA) SW-846 Method 9095B – Paint Filter Liquids Test
  - ASTM International (ASTM) D4397 – Standard Specification for Polyethylene Sheeting for Construction, Industrial, and Agricultural Applications
  - 1. Draft Pre-Design Investigation Report Data Summary Report (Alcoa, March 2015)

**1.03 DESCRIPTION**

- A. The Contractor shall furnish all labor, supervision, materials, tools, equipment, services, accessories, and appurtenances for or incidental to all dredged material and water handling, processing, stockpiling, and management necessary to facilitate disposal in accordance with the Drawings and in the Specifications. This includes, but is not limited to, construction of any necessary modifications to the Staging Area; unloading sediment, debris, and water from dredged material transport scows; processing and dewatering the dredged sediment and debris to meet the specified landfill criteria; segregating, handling, and staging dredged material at the Staging Area prior to transport to the Secure Landfill (SLF); and collecting and containing water for treatment.

- B. The Contractor shall be responsible for determining the means and methods of unloading, handling, processing, dewatering, and transporting the dredged material.
- C. Predesign testing (Draft Pre-Design Investigation Data Summary Report; Alcoa, March 2015) indicates that using a dewatering polymer followed by mixing with Portland cement resulted in the most effective solidification of the dredged sediment samples. The Contractor is not limited to those dewatering and solidification materials or procedures.
- D. The Contractor shall be responsible for the design, construction, and installation of any modifications to the Staging Area as necessary to complete the Work specified herein.
- E. The Contractor shall be responsible for commissioning, testing, operating, and maintaining all equipment, materials, containment and staging areas, access ways, and other supporting features at the Staging Area as part of the Work specified herein.
- F. After the dredging and sediment handling activities are completed, the Contractor shall be responsible for decontaminating and demobilizing the Sediment Processing Area.

#### 1.04 SUBMITTALS

The following submittals shall be submitted in accordance with Section 01 33 00 – Submittal Procedures.

##### A. Pre-Construction

1. The Contractor shall prepare and submit a Dredged Material Management and Processing Plan to the Construction Manager for review and approval. The Dredged Material Management and Processing Plan must be approved prior to construction of modifications to the Staging Area for dredged material management purposes. The Dredged Material Management and Processing Plan shall include, but not be limited to, the following:
  - a. A detailed description of the means and methods, including all equipment and personnel, for managing, handling, processing, dewatering, and stockpiling dredged material. This shall include details regarding the types, sizes, specifications, and quantities of equipment the Contractor proposes to utilize for dredged material unloading and processing including, but not limited to, unloading equipment, buckets, and grapples and mixing equipment, hoppers, tanks, pumps, and piping.
  - b. Details for any proposed modifications to the Staging Area.
  - c. Details for preparing the scow docking and unloading area, including design details for the drip apron and any other control measures (e.g., spill plates, splash shields).
  - d. A detailed description of means and methods for unloading of dredged material and water from transport scows.
  - e. Figures showing the locations, arrangement, and layout of the Sediment Processing Area including dredged material unloading areas, processing areas, stabilization agent staging areas, equipment locations, and any other details pertinent to the processing and handling of the dredged materials.
  - f. A flow chart depicting the dredged material processing and dewatering steps and illustrating the various process streams, including all inputs and outputs, and overall material balance.

- g. Details related to the Contractor's proposed dewatering and stabilizing means and methods. The Contractor shall identify any stabilization agent(s) proposed for use in the dewatering process to satisfy the landfill requirements. The information shall include specific manufacturer and material information and performance data for any proposed stabilization agents. The Contractor shall include calculations and assumptions associated with the selection of the stabilization agent(s) and the estimated quantity of stabilization agent(s) to be used by weight.
- h. A detailed description of the means and techniques for storing, introduction, and mixing of any stabilization agents, including a detailed description of measures for controlling and mitigating dust generation.
- i. Results of any supplemental testing and studies to support the Contractor's proposed dewatering activities.
- j. A description of testing activities and methods to verify that processed dredged material meets the specified criteria for disposal in the SLF in accordance with Part 3.03B.
- k. A description of water management procedures at the Sediment Processing Area.
- l. A description of the procedures, materials, and equipment to be used to prevent cross-contaminating surfaces and materials or tracking of dredged material outside of the Sediment Processing Area.
- m. A description of how the Equipment Decontamination Plan required per Section 01 72 00 – Decontamination of Equipment will be implemented.
- n. A description of how the Staging Area will be decontaminated at the end of each construction season.
- o. A description of the equipment, methods, and materials for covering stockpiles in accordance with Part 3.07.D.
- p. Operation and maintenance procedures for critical equipment according to manufacturers' recommendations including, but not limited to, major daily, weekly, and monthly maintenance and inspection activities. Procedures shall include a contingency plan and the names and contact information of manufacturers and maintenance professionals for critical equipment.

**B. During Construction**

The Contractor shall provide the results of dredged and processed material testing to the SLF operator and the Construction Manager before transport to verify compliance with the landfill requirements.

The Contractor shall include the following details in the Daily Activities Report to be prepared and submitted in accordance with Section 01 31 00 – Project Management and Coordination.

- a. Description of the daily Work activities associated with dredged material unloading, handling, processing, dewatering, and staging.
- b. List of labor and equipment employed.

- c. Number of scows unloaded and scow unloading times.
- d. Results of all testing of dredged material to verify compliance with the specified landfill criteria.
- e. Volume of water collected and conveyed to the water treatment system.
- f. Volume of each type of dredged material (e.g., sediment, debris, vegetation) unloaded and placed in the Staging Area.
- g. Volume of each type of stabilization agent used to process dredged material.
- h. A summary of all inspections conducted as described herein.
- i. Equipment performance, maintenance, hours of downtime, and causes of any downtime.
- j. Delays encountered and relevant details of each delay, such as the causes, resolutions, and measures implemented to avoid similar delays in the future and make up lost time if necessary.

## **PART 2 – PRODUCTS**

### **2.01 GENERAL MATERIALS**

- A. The Contractor shall be responsible for the selection of all types, sizes, and quantities of equipment and vessels needed to perform the Work. Equipment shall meet the minimum specified requirements and meet the production requirements of the Work.

## **PART 3 – EXECUTION**

### **3.01 GENERAL**

- A. The Contractor's dredged material management and processing activities shall comply with all requirements of Section 01 35 43 – Environmental Protection and Section 01 14 00 – Work Restrictions.
- B. The Contractor shall schedule and coordinate dredge material management operations with the SLF operator to allow disposal, as per the requirements of Section 02 81 02 – Transportation and Disposal of Waste Material.
- C. The Contractor shall move dredged material at a rate sufficient to maintain the approved Project schedule. The dredged material unloading and management system shall be designed and operated with the capacity to unload and process dredged sediment at a rate consistent with the Contractor's schedule in accordance with Section 01 32 16 – Construction Progress Schedule. The Contractor shall coordinate their operations to optimize and harmonize dredging and dredged material management operations to minimize downtime. Delays related to the Contractor's equipment will be at no additional cost to the Company.
- D. The Contractor shall implement measures to prevent materials from being misplaced on land or in the waterway. The Contractor shall use drip aprons, spill plates, splash shields, secondary containment, and other approved equipment or controls to prevent the loss of materials during the Work. Any materials that spill or are misplaced by the Contractor in areas not approved by



the Construction Manager shall be reported to the Construction Manager immediately and removed at no additional cost to the Company.

### 3.02 MOBILIZATION

- A. Mobilization activities shall commence only after approval by the Construction Manager of the required pre-construction submittals described in the Specifications. Any mobilization delays related to submittal approvals shall not allow the construction schedule to be extended and shall not be reason to increase the Contract price.

### 3.03 DREDGED MATERIAL PROCESSING REQUIREMENTS

- A. The Contractor shall dewater and stabilize dredged material in accordance with all applicable laws and regulations for transportation over public roadways.
- B. The dredged sediment shall be dewatered or otherwise processed to meet the following landfill criteria prior to transport to the SLF:

The material shall not contain free liquids (based on the Paint Filter Liquids Test [EPA SW-846 Method 9095B] and visual observation).

The material shall not be a characteristic hazardous waste through application of any amendments or stabilization agents.

The material shall meet the minimum unconfined compressive strength specified in Section 02 81 02 – Transportation and Disposal of Waste Material.

The processed material shall be capable of being loaded and unloaded with a standard excavator and wheel loader.

Testing shall be performed by the Contractor in accordance with Part 3.08 to verify compliance with these criteria. If the processed sediment or debris does not meet these criteria, the material shall be reprocessed by the Contractor.

- C. If amendments or stabilization additives are used to process the dredged sediment, the Contractor shall optimize the volume or weight added to the dredged sediment. In addition, the amendments or additives shall not significantly change the characterization of the dredged sediment. Measures shall be implemented to monitor, control, and minimize the amount of heat, if generated, during the mixing and the stabilization process. Control measures shall be implemented to minimize the potential for airborne dust during staging and mixing operations and to maintain compliance with the specified requirements. The proposed use of quick lime and lime kiln dust as amendments or stabilization additives shall be minimized and shall require approval from the Construction Manager prior to use.
- D. Debris and shoreline vegetation that have come in contact with river sediment shall be segregated and transported for disposal at the SLF. Debris subject to disposal in the SLF shall be processed to meet the following landfill criteria prior to transport:

Vegetation, branches, and logs shall be chipped or cut into sections with maximum lengths of 2 feet and maximum diameters of 2 feet.

Boulders shall have a maximum sizing of 2 feet by 2 feet by 2 feet.

Miscellaneous debris (i.e., metal, plastics, and rubber) is acceptable and shall have a maximum sizing of 2 feet by 2 feet by 2 feet.

Concrete shall have a maximum sizing of 2 feet by 2 feet by 2 feet, and any reinforcement shall not extend more than 2 inches from the concrete.

Hauling of processed vegetation, green waste, and other debris to the SLF shall be coordinated with the SLF operator.

- E. Debris and shoreline vegetation that have not come in contact with river sediment shall be segregated and transported for management in accordance with Section 02 81 02 – Transportation and Disposal of Waste Material.
- F. The Contractor may elect to or be required to segregate and decontaminate certain removed debris for reuse of the material as part of remedial area restoration activities (e.g., boulders removed from the river during dredging for use in restoring the riprap areas designated on the Drawings or for use in the habitat rock). The Construction Manager may identify and notify the Contractor of items identified for reuse. Materials for reuse shall be decontaminated by the Contractor using a high-pressure water spray and any other methods necessary (e.g., brushing) to remove all adhered sediments and other solids to the satisfaction of the Construction Manager. Decontaminated materials shall be subject to visual inspection by the Construction Manager prior to reuse. Decontamination shall be performed within a contained area at the Staging Area where water and solids can be collected for proper disposal. Decontaminated debris shall be segregated and staged separately from other materials in a location approved by the Construction Manager.
- G. The Contractor shall contain and collect water for pretreatment in accordance with Section 02 72 00 – Water Pretreatment.

### 3.04 SEDIMENT PROCESSING AREA

- A. The Contractor shall construct any necessary modifications to the Staging Area and Sediment Processing Area in accordance with the Contractor's approved Dredged Material Management and Processing Plan and the specified requirements.
- B. The Contractor shall establish, construct, and maintain a scow docking and unloading area adjacent to the Sediment Processing Area to dock and unload dredged material transport scows. At a minimum, the scow docking and unloading area shall include the following:

All equipment, materials, and labor needed to securely dock dredged material transport scows at the Sediment Processing Area to facilitate unloading of dredged material and water.

Docking facilities constructed over a length determined by the size, weight, and dimensions of the dredged material transport scows selected by the Contractor.

A drip apron constructed along the lift path of the dredged material unloader between the Sediment Processing Area and the dredged material transport scow to prevent material from being spilled into the water during scow unloading. The drip apron shall be sloped toward the containment area so that any material that drips on the apron is conveyed directly by drainage from the apron to the containment area.

Measures to prevent materials from being misplaced on land or in the waterway; the Contractor shall use spill plates, splash shields, secondary containment, and other equipment or controls to prevent the loss of materials during the Work.

- A decant water pumping system to remove water from dredged material scows. The decant water shall be pumped to the temporary water pretreatment system.
- C. The Contractor shall maintain the containment area at the Sediment Processing Area to contain dredged materials, debris, and liquids and to prevent release or spillage to surface water.
  - D. The Contractor shall be responsible for maintaining the integrity of the paved surface on the Sediment Processing Area at the Staging Area. Any proposed modifications of existing asphalt pavement shall be included in the Contractor's Dredged Material Management and Processing Plan (see Part 1.04.A.1). Solids collected within the containment area shall be transferred to the SLF after being processed to meet the specified landfill criteria. Liquids collected within the containment area shall be transferred to the water pretreatment system for treatment.
  - E. The Contractor shall install, maintain, and operate transfer pumps, sump pumps, piping, storage tank(s), and appurtenances as necessary to collect and transfer water that accumulates in the containment area to the temporary water pretreatment system in accordance with Section 02 72 00 – Water Pretreatment.
  - F. The Contractor shall have readily available adequate spill containment and cleanup supplies at the Sediment Processing Area.

### 3.05 DREDGED MATERIAL UNLOADING

- A. The Contractor shall provide all labor, equipment, and materials necessary to secure scows at the Staging Area, dewater scows, and offload dredged and processed material into the Sediment Processing Area at the Staging Area.
- B. The Contractor shall ensure that the drip apron(s) and other shields are in place prior to unloading dredged material transport scows to prevent sediment from being spilled into the water during unloading.
- C. The Contractor shall continuously monitor for any spillage or misplaced material during unloading operations.
- D. The Contractor shall remove excess water from the dredged material transport scows prior to or in conjunction with the unloading of sediment and debris. The water shall be pumped to water storage tanks or the temporary water pretreatment system.
- E. Dredged material transport scows shall be unloaded evenly in a manner that does not cause damage to the scow, create an unsafe situation, or cause spillage of the dredged material into the water.
- F. Dredged material transport scows shall be maneuvered as necessary to facilitate the removal of sediment, debris, and water from the dredged material transport scows. The unloading equipment shall not be used to hold, tip, level, or move the dredged material transport scows.
- G. Sediment, debris, and water may remain in dredged material transport scows after unloading as the Contractor deems appropriate for efficient dredging, dredged material transport, and unloading operations. At the end of the Project or if Work is discontinued for more than 5 days, all dredged sediment, debris, and water must be unloaded from the dredged material transport scows.
- H. The exterior deck of dredged material transport scows shall be clean and free of sediment and debris before departing the scow docking and unloading area.

- I. The drip apron shall be cleaned after unloading each dredged material transport scow.
- J. The drip apron and other shielding components shall be inspected daily at a minimum or as directed by the Construction Manager. Any necessary repairs or replacement shall be implemented immediately to the satisfaction of the Construction Manager. The Construction Manager may elect to stop Work activities at the Project Site in the event the drip apron or other shielding components do not meet the satisfaction of the Construction Manager.
- K. Pumps, piping, and hoses used to unload dredged material transport scows shall be protected against leakage and rupture. Pump and piping systems shall be inspected by the Contractor daily at a minimum or as directed by the Construction Manager.

### 3.06 DREDGED MATERIAL MANAGEMENT

- A. The Contractor shall provide all labor, equipment, and materials necessary to process dredged material, manage dredged material stockpiles at the Staging Area, and test dredged material as required for transport and disposal in the SLF. The Contractor shall be responsible for all materials handling and processing associated with dredged material management.
- B. Dredged material handling, processing, dewatering, and staging activities shall be conducted within the Sediment Processing Area at the Staging Area or in secured, watertight scows.
- C. The Contractor shall utilize available reference documents as provided in Section 00 31 00 – Available Project Information or conduct its own testing to determine appropriate stabilization agents and dosage rates or for any other dewatering methods selected by the Contractor. The Contractor shall coordinate with the SLF operator in the determination of stabilization agents and dosage rates or other dewatering methods.
- D. Dredged material dewatering, processing, and mixing operations shall be performed in a manner that minimizes dust generated such that dust is not visible beyond the immediate vicinity of the mixing location and is compliant with the requirements in Section 01 35 43 – Environmental Protection. The Contractor shall use control measures and techniques to comply with these requirements.
- E. The Contractor shall monitor air in the breathing zone during dredged material dewatering, processing, and mixing operations in accordance with the Contractor's Health and Safety Plan.
- F. If any stabilization agents are used, mixing shall continue until the material is homogenous and achieves the criteria in Part 3.03.B.

### 3.07 MATERIAL STAGING PILE MANAGEMENT

- A. Staged materials shall be maintained in separate piles based on the type and characteristics of the material (e.g., unprocessed sediment, processed sediment, oversized debris, and processed debris).
- B. Material staging areas shall be sloped to facilitate the collection and treatment of liquids generated.
- C. Measures shall be implemented to control the potential for airborne dust during material staging and to maintain compliance with the specified requirements.
- D. At a minimum, staged dredged material piles at the Staging Area shall be covered when directed by the Construction Manager based on environmental monitoring results to reduce or minimize dust, odor, or air emissions. During such events, the Contractor shall cover the piles

using a spray cover or other methods approved by the Construction Manager. The Contractor's proposed methods, procedures, and materials for covering staging piles will be subject to approval by the Construction Manager.

1. Spray-on covers, if used, shall be applied to the staging piles in accordance with the manufacturers' recommendations. The spray-on cover color shall be selected by the Construction Manager. Spray-on covers shall be applied only under weather conditions pre-approved by the Construction Manager (e.g., excluding periods of high winds).
2. The Contractor shall conduct daily inspections and maintenance of the staging piles and covers.

### 3.08 DREDGED MATERIAL TESTING

- E. The Construction Manager will collect and test at least one composite sample per day of processed materials to determine whether the processed sediment contains free liquids based on the Paint Filter Liquids Test (EPA Method 9095B) to verify compliance with the landfill requirements specified in Part 3.03.B.
- F. The Construction Manager or their designee will conduct testing of the processed materials to determine whether the processed sediment meets the minimum unconfined compressive strength as described in Section 02 81 02 – Transportation and Disposal of Waste Material. The Construction Manager will determine the frequency of such testing based on field observations, the nature of the dredged material, and the results of prior strength testing. It is anticipated that the strength testing will be performed on a daily basis.
- G. The Contractor shall provide full access necessary for the Construction Manager or their designee to perform dredged material testing. The Construction Manager will provide the test results to the Contractor.
- H. The Construction Manager may conduct additional sampling and testing to verify that the processed material meets the landfill requirements.

### 3.09 WATER MANAGEMENT

- A. The Contractor shall manage construction water from the dredged material dewatering process; stormwater runoff collected in scows, the Sediment Processing Area, drip apron, water collection system, and sumps; decontamination wash water; and water from other water-generating activities conducted in the Sediment Processing Area. This water shall be collected, conveyed, treated, and discharged as detailed in Section 02 72 00 – Water Pretreatment and in accordance with all permits.

### 3.10 MAINTENANCE AND HOUSEKEEPING

- A. The Contractor shall perform all necessary maintenance activities at the Staging Area and Sediment Processing Area throughout the duration of the Work.
- B. The Contractor shall inspect the Staging Area at least once per day and include an inspection summary in the Daily Activities Report to be prepared and submitted in accordance with Section 01 31 00 – Project Management and Coordination. The inspection and associated maintenance shall include the following activities:

The Contractor shall inspect all paved areas to ensure integrity of the surface.

The Contractor shall inspect water collection systems and sump locations to verify effective performance of the system.

The Contractor shall inspect all barriers, liners, containment systems, and environmental controls.

The Contractor shall be responsible for inspecting stockpile sheeting or covering at least once per day.

The Contractor shall keep the Staging Area clean and free from rubbish and debris at all times.

Any deficiencies or necessary repairs noted during inspections shall be reported to the Construction Manager and implemented immediately.

### 3.11 DECONTAMINATION

- A. Equipment and vehicles that enter the Sediment Processing Area or come in contact with contaminated dredged material shall be decontaminated in accordance with Section 01 72 00 – Decontamination of Equipment before being removed from the exclusion zone or before demobilization from the Project Site.

### 3.12 WINTERIZATION

- A. The Contractor shall perform winterization activities in accordance with the Contractor's approved Winterization Plan and Section 01 71 13 – Mobilization and Demobilization.

### 3.13 PROTECTION OF PROJECT SITE AND WATER RESOURCES

- A. The Contractor shall comply with applicable federal, state, and local laws, ordinances, and regulations concerning the control and abatement of water pollution in accordance with Section 01 35 43 – Environmental Protection during dredged material management and processing activities.

**- END OF SECTION -**

**SECTION 35 80 00**

**MARINE RESUSPENSION CONTROLS**

**PART 1 – GENERAL**

**1.01 REFERENCED SECTIONS**

- A. Section 01 31 00 – Project Management and Coordination
- B. Section 01 33 00 – Submittal Procedures
- C. Section 01 35 43 – Environmental Protection
- D. Section 02 81 02 – Transportation and Disposal of Waste Material
- E. Section 35 02 00 – Marine Equipment and Marine Traffic Control

**1.02 REFERENCES (NOT USED)**

**1.03 DESCRIPTION**

- A. The Contractor shall furnish all labor, supervision, materials, tools, equipment, services, accessories, and appurtenances necessary for, or incidental to, the installation of a resuspension control system (mobile or stationary) to comply with the water quality performance requirements as specified in Section 01 35 43 – Environmental Protection during the implementation of the Work.

**1.04 SUBMITTALS**

The Contractor shall submit the following in accordance with Section 01 33 00 – Submittal Procedures:

**A. Pre-Construction**

- 1. Marine Resuspension Control Plan. The Contractor shall submit a Marine Resuspension Control Plan to the Construction Manager for review and approval. The Marine Resuspension Control Plan shall include, but not be limited to, the following:
  - a. Proposed design, layout, and plan for the installation, deployment, inspection, and maintenance of the system(s).
  - b. Proposed manufacturer's material and equipment specification sheets detailing the materials to be used for the marine resuspension control system(s).
  - c. Proposed plan for performing inspections of the marine resuspension control system(s) on a frequency of twice per day (minimum) to verify the system is free from defects and remains effective during performance of the Work.
  - d. Proposed methods and equipment for turbidity curtain reefing where applicable.
  - e. Proposed methods for turbidity curtain anchoring where applicable.

- f. Proposed methods for turbidity curtain weight attachment where applicable.
  - g. Lighting and signage that will be implemented to adequately notify Project and non-Project vessels of work areas and the presence of any in-water equipment in accordance with Section 35 02 00 – Marine Equipment and Marine Traffic Control.
  - h. If the Contractor elects to propose the use of a mobile system (e.g., moonpool system), provide a system relocation plan outlining turbidity control details and potential settling durations based on anticipated turbidity levels and settling rates, as well as the presence of sheens.
  - i. Proposed maintenance plan (including repair and replacement of curtain sections, if needed) to ensure adequate performance of the marine resuspension control system(s) and contingency systems to meet the performance criteria.
  - j. Proposed storm management plan to ensure systems and barriers are adequately secured and will not damage the surrounding areas or interfere with normal waterway operations during storm events.
  - k. Proposed plan for removal and final decontamination or characterization and disposal of marine resuspension control system(s) prior to demobilization from the Project per the Specifications.
2. The design(s) of any long-term, stationary resuspension control system(s) shall be stamped and signed by a Professional Engineer.
- B. During Construction
1. Daily Marine Resuspension Control System Inspection Reporting. The Contractor shall prepare and submit a Daily Marine Resuspension Control System Inspection Report as a component of the Daily Activities Report as detailed in Section 01 31 00 – Project Management and Coordination. These reports shall be submitted to the Construction Manager the day following the 24-hour period covered by the report. At a minimum, the report shall include the following:
- a. Results of the twice daily (minimum) inspections and any maintenance activities to the marine resuspension control system(s).
  - b. Any modifications to the marine resuspension control system(s) required to meet water quality requirements.
  - c. Additional inspections performed by the Contractor as directed by the Construction Manager based on observed field conditions

#### 1.05 PERFORMANCE CRITERIA

- A. The Contractor shall design the resuspension control system(s) as required herein and to meet the water quality performance requirements as specified in Section 01 35 43 – Environmental Protection.



## **PART 2 – PRODUCTS**

### **2.01 MOBILE RESUSPENSION CONTROL SYSTEM**

- A. If the Contractor elects to use a mobile resuspension control system, the system shall meet the performance criteria specified herein and consist of the following elements, at a minimum:
  - 1. Modular barges or floating frame with deck cleats, galvanized pipe flanges, and fittings, as required
  - 2. Turbidity curtain or approved equivalent with reefing lines
  - 3. Sorbent booms and pads

### **2.02 STATIONARY RESUSPENSION CONTROL SYSTEM**

- A. If the Contractor elects to use a stationary resuspension control system, the system shall meet the performance criteria specified herein and consist of the following elements, at a minimum:
  - 1. Tool-free aluminum universal end connectors with Velcro flaps
  - 2. Adjustable line skirt reefing with anchor points
  - 3. Closed cell foam flotation with tension cable
  - 4. Turbidity curtain or approved equivalent with reefing lines
  - 5. Double bottom ballast chain
  - 6. Sorbent booms and pads
- B. The stationary resuspension control system shall be designed with adequate strength and anchor points to withstand the expected hydraulic forces at the Project Site.

### **2.03 SORBENT BOOMS AND PADS**

- A. Sorbent booms shall be Parker Systems, Inc., PSI-SB5 Light Oils Sorbent Booms or equivalent approved by the Construction Manager.
- B. Sorbent pads shall be Parker Systems, Inc., PSI-P10 15 inches by 19 inches Heavy Weight Oil sorbent pads or equivalent approved by the Construction Manager.

## **PART 3 – EXECUTION**

### **3.01 WATER QUALITY PERFORMANCE CRITERIA**

- A. The Contractor shall comply with the water quality performance criteria as described in Section 01 35 43 – Environmental Protection.

### **3.02 RESUSPENSION CONTROL REQUIREMENTS**

- A. The Contractor's resuspension control system(s) shall be deployed and operational during near shore debris removal, near shore dredging, and near shore backfilling unless otherwise approved by the Construction Manager.

- B. The resuspension control system(s), where deployed, shall fully surround the near shore debris removal, near shore dredging, and near shore backfilling areas unless otherwise approved by the Construction Manager.

### 3.03 GENERAL

- A. The Construction Manager or their designee will conduct water quality monitoring in accordance with Section 01 35 43 – Environmental Protection. The Construction Manager will communicate the results of this monitoring to the Contractor. The Contractor shall conduct all Work in accordance with the specified water quality requirements. The Contractor shall stop Work and modify Work methods, procedures, or operation of the marine resuspension control system(s) if the water quality performance criteria are not being met. Any modifications required to meet water quality criteria shall be performed by the Contractor at no additional cost to the Company.
- B. The Contractor shall furnish, install, deploy, inspect, relocate, and maintain the marine resuspension control system(s) in strict accordance with the manufacturer's recommended procedures to the satisfaction of the Construction Manager and consistent with the layout and design provided with the Contractor's Marine Resuspension Control Plan. If such controls and systems are not adequately installed, deployed, inspected, relocated, and maintained to the satisfaction of the Construction Manager, affected remediation activities shall be halted immediately until acceptable conditions are established as determined by the Construction Manager at no additional cost to the Company.
- C. The Contractor shall deploy the marine resuspension control system(s) in accordance with Section 35 02 00 – Marine Equipment and Marine Traffic Control.
- D. The Contractor shall at no time block navigation or fish passage in the Grasse River.
- E. The Contractor shall size turbidity curtains and use reefing lines to accommodate varying water depths. Turbidity curtains shall remain suspended above the sediment surface and shall be adjusted to maintain these requirements or as requested by the Construction Manager.
- F. If the Contractor elects to use a stationary resuspension control system, the system shall be anchored using adequately sized weights. Anchor weight spacing shall be selected by the Contractor and approved prior to installation. Any damage to the turbidity curtain or surrounding property due to improper sizing, installation, or moving of the weight anchors shall be the sole responsibility of the Contractor and shall be repaired to the satisfaction of the Construction Manager at no additional cost to the Company.
- G. The Contractor shall have available sorbent booms or pads that shall be deployed immediately in the event that sheens or oil-related products are observed within the near shore work areas.
- H. If sheens are observed outside of the marine resuspension control system(s), the Contractor shall comply with the requirements specified in Section 01 35 43 – Environmental Protection.

### 3.04 CONTINGENCY SYSTEMS

- A. The Contractor shall provide and maintain an adequate supply of turbidity curtains, sorbent booms, and sorbent pads on site as contingency items at all times for immediate use if needed for system repairs or modifications or for addressing observed surficial impacts (e.g., sheen) at the direction of the Construction Manager and in accordance with the information provided herein.

- B. The Contractor shall not begin marine Work until the contingency items listed in Part 3.04.A are on site or otherwise approved by the Construction Manager.

3.05 MAINTENANCE, DECONTAMINATION, AND DEMOBILIZATION

- A. The Contractor shall visually inspect the resuspension control system(s) and associated components from a boat or vessel during installation and during deployment at a minimum of twice per day (e.g., once per shift or at the beginning and middle of the day and during the middle of the day). Additional inspections shall be conducted at the Contractor's discretion or at the request of the Construction Manager following storm periods, noticeable turbidity increases outside the system(s), unexpected curtain position or behavior, contact with the curtain by equipment or debris, or other abnormal events.
- B. The Contractor shall maintain the resuspension control system(s) in proper working order during as described in Part 3.02. Any torn, damaged, or otherwise ineffectively functioning sections of the systems identified during routine inspections shall be promptly repaired or replaced by the Contractor as necessary to maintain the water quality performance criteria as specified in Section 01 35 43 – Environmental Protection.
- C. Prior to moving the resuspension control system(s), the Contractor shall ensure that all sheens and turbidity within the curtained-off area reaches a level such that downstream water quality performance criteria are not exceeded during repositioning or movement of the resuspension control system(s).
- D. Materials used during the Work described herein shall be disposed of in accordance with Section 02 81 02 – Transportation and Disposal of Waste Material.

**- END OF SECTION -**